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EPA Superfund
Record of Decision Amendment:

RENORA, INC.
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EDISON TOWNSHIP, NJ
09/30/1994

DECLARATION STATEMENT

RECORD OF DECISION AMENDMENT

RENORA, INC. SITE

Site Name and Location

Renora, Inc.
Edison Township, Middlesex County, New Jersey

Statement of Basis and Purpose

This Record of Decision (ROD) Amendment documents the U.S. Environmental Protection Agency's (EPA's) selection of a modified remedy for the Renora, Inc. site. The first ROD, which was issued on September 29, 1987, is being amended for that component of the remedy addressing soils contaminated with polycyclic aromatic hydrocarbons (PAHs). This modified remedy was selected in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §9601 et seq., and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This document explains the factual and legal basis for amending the remedy for the Renora site. An administrative record for the site, established pursuant to the NCP, 40 CFR 300.800, contains the documents that form the basis for EPA's selection of the remedial action (see Appendix III).

The State of New Jersey can not concur with the selected remedy unless institutional controls are established.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD Amendment, may present an imminent and substantial threat to public health, welfare or the environment.

Description of the Selected Remedy

The initial ROD for the Renora site included the excavation and off-site disposal of soils contaminated with polychlorinated biphenyls (PCBs) and biodegradation of PAH-contaminated soils. The first phase of the remedy, involving the PCB-contaminated soils, has been completed. Treatability studies conducted subsequent to the ROD indicated that biodegradation will not effectively reduce PAHs to acceptable levels. Therefore, the remedy will be modified to include the removal of surface soils contaminated with PAHs.

The major components of the modified remedy are as follows:

- Excavation and off-site disposal of the top two feet of contaminated surface soils and any debris at an EPA approved landfill; and

- Backfill of the site with certified clean fill.

Declaration of Statutory Determinations

The selected remedy meets the requirements for remedial actions set forth in CERCLA §121, 42 U.S.C. §9621: (1) it is protective of human health and the environment; (2) it attains a level or standard of control of the hazardous substances, pollutants and contaminants, which at least attains the legally applicable or relevant and appropriate requirements under federal and state laws; (3) it is cost-effective; and (4) it utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. However, because treatment of hazardous substances, pollutants or contaminants at the site was not found to be practicable, the remedy does not satisfy the statutory preference for treatment as a principal element.

A five-year review of the remedial action pursuant to CERCLA §121(c), 42 U.S.C. §9621(c), may not be necessary because this remedy will not result in hazardous substances remaining on the site above health-based levels.

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William J. Muszynski P.E. Date
Deputy Regional Administrator
U.S. EPA, Region II

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RENORA, INC.

SITE DESCRIPTION

Location

The Renora, Inc. (Renora) site is located at 83 Main Street in the Bonhamtown section of Edison Township, Middlesex County, New Jersey (see Figure 1). The site occupies approximately one acre of the total property owned by Clementi Brothers Inc., and is enclosed by a perimeter chain link fence with locking gates. The Clementi property is bordered to the north by Mill Brook, to the south by the New Jersey Turnpike (Turnpike) right-of-way, to the east by South Main Street, and to the west by a Conrail right-of-way. Figure 2 shows the site and surrounding land use.

The site is currently zoned for light industrial use. Land use in the vicinity of the site is primarily residential and light industrial. The Clementi property adjacent to the site is occupied by an automobile repair and body shop, welding, machinery and electric supply shops, a rag cleaning operation, an excavation and construction company, and a delicatessen. The portion of Clementi's property located between the site and the Turnpike right-of-way is used for storage of miscellaneous material including gravel, wood, sand, and abandoned vehicles.

Residential uses in the vicinity of the site include an apartment complex located south of the Turnpike, approximately 200 feet from the site, and the Edison Glen Condominium Complex, which is located directly across Mill Brook. The Edison Glen Condominium Complex contains 315 housing units. Sensitive land uses in the vicinity of the site include a senior citizen center, located approximately 1,700 feet south, and a nursery school, located within 2,000 feet of the site.

Topography and Hydrogeology

The topography of the site, which was built up from the floodplain with demolition debris and fill, is relatively flat. Surface elevations range from approximately 62.5 feet above mean sea level (msl) in the western corner of the site to approximately 66 feet above msl along the southeastern perimeter. The northwestern edge of the site slopes steeply down nine to twelve feet to Mill Brook. The direction of runoff drainage across the site is toward Mill Brook.

The site is underlain by a surficial fill layer consisting of construction debris in a sandy silty matrix with traces of clay, ranging in thickness from two to eleven feet. The fill layer is underlain by a layer of naturally deposited sediments of fine-grained sandy or clayey silt, with occasional layers of clay, ranging in thickness from three to ten feet. The fine grained sediments are underlain by a layer of weathered bedrock, which is composed of clay, silt and fine sand. Figure 3 shows a generalized geologic cross section of the site.

There are two water bearing zones or aquifers underlying the site; the overburden, or shallow aquifer and the deep, or bedrock aquifer. The clay and fine-grained materials of the deep bedrock aquifer are not favorable for ground water flow and will typically exhibit a lower hydraulic conductivity than the coarser grained overburden materials. The lower hydraulic conductivity, combined with the thickness of the weathered bedrock, limits the downward flow of ground water from the overburden to the deep bedrock aquifer; thus confining ground water flow to the horizontal direction in the shallow aquifer.

Water level measurements were taken in monitoring wells located on the site and in piezometers located in Mill Brook and on opposite banks of Mill Brook. Measurements indicated that ground water levels in the shallow zone were higher on the Edison Glen side of Mill Brook than those on the Renora side. In addition, the brook's surface is lower in elevation than the water table on both sides. This indicates that the ground water from beneath Edison Glen and the site moves towards and discharges to Mill Brook. Ground water from beneath the site does not appear to flow under the brook to Edison Glen.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Mr. Clementi acquired the property from the New Jersey Turnpike Authority in November 1976. Renora operations began in 1978 when Clementi leased a portion of his property to Ronald Kaschner, who had registered Renora with the New Jersey Department of Environmental Protection (NJDEP) as a collector and hauler of waste oils in October 1977. During the period of its operation (1978-1982), Renora transported and accepted materials containing hazardous substances for transfer, storage, and blending. Contamination of the facility occurred as a result of transfer spills and container leaks from accumulated wastes.

During a July 12, 1978 site inspection conducted by NJDEP and the Edison Township Department of Health and Human Resources, several minor spills were observed. In addition, the NJDEP and Edison Township determined that the facility was operating as a special waste transfer facility without proper registration. At that time, NJDEP advised Mr. Kaschner to register as a Special Waste Transfer Facility.

On March 28, 1980, NJDEP issued a Notice of Prosecution ordering Mr. Kaschner to cease operations and remediate the site. NJDEP conducted an inspection on June 24, 1980 to assess compliance with the Notice of Prosecution. The inspection revealed that although operations had ceased, no remedial actions had taken place. Consequently, in July 1980, NJDEP served Mr. Kaschner with an official notice directing him to clean up the site. Site inspections conducted throughout the remainder of July and August 1980 indicated that there had been no substantial improvement in site conditions.

In August 1980, Mr. Raschner and NJDEP entered into an Order and Settlement Agreement for site cleanup with a scheduled completion date of October 1980. In November 1980, NJDEP revoked Mr. Kaschner's registration to collect and haul waste, effectively putting him out of business. Claiming lack of funds, Mr. Kaschner abandoned cleanup activities in December 1980. He abandoned the site in June 1982 and EPA included it on the National Priorities List on December 20, 1982.

In August 1984, EPA, in consultation with NJDEP, determined that site conditions presented an imminent danger to human health and the environment and that a removal action was necessary. On September 28, 1984, EPA issued an Administrative Order, under Section 106 of CERCLA, to all known potentially responsible parties (PRPs) for the performance of this action. The order directed the PRPs to remove all containers, contents, and visibly contaminated soil from the site. A removal action was initiated in October 1984, and was completed on April 17, 1985. Approximately 1,000 drums, 25 tankers, truck trailers and their contents, and 200 tons of visibly contaminated soils were shipped off site for proper disposal. All removal activities were conducted under EPA oversight.

On September 17, 1984, EPA sent Notice Letters to all PRPs giving them the opportunity to conduct or finance the Remedial Investigation and Feasibility Study (RI/FS). On May 29, 1985, an Administrative Consent Order (EPA Docket Number: II-CERCLA-50112) was signed between the EPA and a group of the PRPs performing the RI/FS. This study was conducted out between May 1985 and the summer of 1987. All work was carried out under EPA oversight. In support of the RI/FS, Camp Dresser & McKee (CDM) conducted an Endangerment Assessment, under contract to EPA, to assess the risk posed to human health and the environment.

The first Record of Decision (ROD) for the site was signed on September 28, 1987. The selected remedy included the following components: excavation and off-site disposal of all Polychlorinated Biphenyl (PCB) contaminated soils with concentrations above 5 milligrams per kilogram (mg/kg); biodegradation of all Polycyclic Aromatic Hyrdrocarbon (PAH) contaminated soils with concentrations above 10 mg/kg, using ground water as an irrigation medium in the bioremediation treatment system; and backfilling and revegetation of the site. A group of the PRPs entered into a Consent Decree with EPA and NJDEP on March 21, 1989 for the conduct of the design and implementation of the remedy selected in the ROD. The PCB soil excavation and site restoration phase of the selected remedy was completed by the PRPs in January 1989. The site fencing was replaced to prevent public access to the site. Details regarding the PCB-contaminated soil removal are documented in the Sampling and Analysis Results for the PCB Excavation and Off-Site Landfilling Phase of the Site Remediation Report (BCM Engineers Inc., August 1989).

To achieve the bioremediation of the PAH-contaminated soils, a group of the PRPs conducted treatability studies between 1989 and 1990. Results of the studies indicated that although the microbial activity in the soil was within expected requirements for biodegradation, no reduction in PAH concentration was observed. The inability of the microbial population to degrade the contaminants present in the soils was determined to

be due to: 1) the high clay content of the soil, which tends to bind to the PAHs, making them unavailable for microbial degradation; 2) the presence of non-contamination related organic carbon, which served as a preferential carbon source for the microorganisms; and 3) the complexity of the PAH structure, which made it difficult to biodegrade these contaminants. In addition, the petroleum hydrocarbons present are predominantly composed of high boiling point hydrocarbons, which are not easily degradable. The studies concluded that bioremediation is not a viable treatment method for the PAH-contaminated soils.

EPA, in consultation with NJDEP, determined that it would be necessary to redefine the nature and extent of site contamination and reassess remedial alternatives for the site. An order Modifying the Consent Decree for a group of the PRPs' performance of a Phase II Feasibility Study (FS) was entered and became effective on March 18, 1991.

As part of the Phase II FS, additional treatability studies for stabilization/solidification and asphalt blending were performed. The studies concluded that stabilization/solidification technologies would not be effective in treating the PAH-contaminated soil.

The Phase II FS also included additional field investigations to determine the extent of contamination remaining at the site. The results of these investigations are presented under the "Summary of Site Characteristics", below.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Phase II FS report and the Proposed Plan for this ROD Amendment were released to the public for comment on July 20, 1994. These documents were made available to the public in the administrative record file at information repositories in the Edison Township Public Library and EPA's Region II office in New York City. The notice for these documents was published in the News Tribune on July 20, 1994. A public comment period was held from July 20, 1994 to August 18, 1994. In addition, a public meeting was held on August 9, 1994 to present the Proposed Plan for the site. At this meeting, representatives from EPA answered questions regarding remedial alternatives under consideration. All comments which were received by EPA during the public comment period, including the verbal comments expressed at the public meeting, are addressed in the Responsiveness Summary, which is attached as Appendix IV.

SCOPE AND ROLE OF RESPONSE WITHIN SITE STRATEGY

This is an amendment to the first ROD, which selected removal of PCB-contaminated soils and bioremediation of PAH-contaminated soils as the remedy for the site. As previously described under the "Site History and Enforcement Activities", actions to reduce site risks, including removal of waste vessels and PCB-contaminated soils, have been completed. EPA expected that bioremediation would be successful in addressing the residual soil contamination. However, treatability studies indicated that this treatment method was not viable for the PAH-contaminated soils.

The primary objective of the ROD Amendment is to address the residual soil contamination at the site. Consequently, a new and final remedy to address the PAH-contaminated soils is being selected.

SUMMARY OF SITE CHARACTERISTICS

Additional field investigations were conducted by the PRPs as part of the Phase II FS. The purpose of the field investigations was to:

- Define the present nature and extent of contamination at the site.
- Examine possible sources of oil seeps observed in Mill Brook.
- Determine existing ground water quality and ground water usage in the vicinity of the site.
- Determine the potential impact of site contamination on Mill Brook surface water and sediments.

To attain these objectives, the following activities were undertaken:

- Surface and subsurface soil sampling
- Ground Water Sampling
- Surface water and sediment sampling
- Test pit excavation
- Well survey

See Figure 4 for all sampling locations. The results of the field investigation are summarized as follows.

Well Survey Results

A well search identified the existence of eleven potential drinking water supply wells located in the vicinity of the site. Of the eleven wells identified, four wells are active, four wells are located outside Edison Township and the status of three wells is unknown. Of the four active wells, two are located upgradient from the site and two are located more than one mile away from the site. In addition, all four active wells are screened in the deep aquifer (greater than 100 feet) and are not expected to be impacted by site contamination. Figure 5 depicts the location of ten of the eleven potential drinking water wells.

Edison Township residents depend on public water for their potable water supply. Edison Township purchases its public water supply from Elizabethtown Water Company and Middlesex Water Company. Both companies rely on surface water as their primary source for drinking water. The Middlesex Water Company also maintains three deep wells, located four to five miles north of the site, that are used only in summertime drought conditions.

Ground Water Investigation

Ground water samples were collected from the three on-site monitoring wells and one off-site monitoring well. Analysis was performed on both filtered and unfiltered ground water samples.

As shown in Table 1, analytical results indicate that volatile organic compounds (VOCs) and semi-volatile organic compounds (semi-VOCs) were detected at low levels in both on- and off-site monitoring wells.

Metals detected in on-site, unfiltered ground water samples included arsenic, chromium, lead and zinc; lead (0.013 ppm) was the only metal detected at concentrations exceeding federal Maximum Contaminant Levels (MCLs) and state Ground Water Quality Standards (GWQS). Metals detected in the on-site, filtered ground water samples included arsenic, chromium, lead and zinc; however, no metals were detected above MCLs or GWQS. Arsenic was the only metal in off-site filtered and unfiltered ground water samples detected above MCLs and GWQS (0.082 and 0.093 ppm, respectively).

Surface and Subsurface Soil Investigation

Surface (0-2 feet) and subsurface (greater than 2 feet) soil samples were collected during the installation of monitoring wells and soil borings, and during the excavation of one test pit. A total of 29 soil samples were collected. One sample from each soil boring was analyzed for Resource Conservation and Recovery Act (RCRA) characteristics of toxicity, ignitability, corrosivity, and reactivity. In addition, six seep borings were placed along the adjacent fence line and advanced to the groundwater surface to investigate a potential source of oil seepage into Mill Brook.

As shown in Table 2, the analytical results indicate that PAHs are present at variable levels throughout the site. The highest levels of PAHs are found in the surface soils, in which the maximum concentration of total PAHs detected was 180 ppm. PAHs detected in the surface soils include benzo(a)pyrene, benzo(b)fluoranthene, benzo(a)anthracene, chrysene and fluoranthene. PAHs are found in the subsurface soils, but at considerably lower levels.

VOCs including benzene, toluene and xylene were detected at low levels in the surface and subsurface soils. Metals including arsenic and lead were detected at low levels in the surface soils, at maximum concentrations

of 10 ppm and 210 ppm, respectively. The maximum concentrations of arsenic and lead detected in the subsurface soils (8-10 feet), were 721 ppm and 338 ppm, respectively.

All analyses for RCRA Toxicity Characteristic Leaching Procedure (TCLP) were negative, with the exception of the lead level in one boring. The concentration of lead in the leachate was 10.5 milligrams per liter (mg/l), exceeding the 5 mg/l limit.

Results from the six seep borings placed along the fence line adjacent to Mill Brook did not indicate the presence of oil, or constituents of oil. In addition, no sludges or other indicators of hazardous waste or toxic substances were observed.

Surface Water and Sediment Investiaation

Three surface water samples were collected from Mill Brook from locations upgradient from the site, adjacent to the site, and downgradient from the site. As shown in Table 3, the analytical results of the surface water samples indicate that concentrations of all compounds detected were below the federal and state water quality standards, with the exception of chromium (0.0264 ppm), which was detected above both the federal and state water quality criteria and, alpha-BHC (0.052 ppm), which was detected above state water quality criteria. Low levels of VOCs, semi-VOCs, metals and pesticides/herbicides were detected. However, there was no significant difference in concentrations of any of the contaminants detected in the upstream, adjacent and downstream samples.

Three sediment samples were collected from Mill Brook at the same locations as the surface water samples. As shown in Table 4, the analytical results of the sediment samples indicate that concentrations of PAHs were significantly greater in sediments located adjacent to, and downstream from the site; upstream 731 ppb, adjacent 9,693 ppb, downstream 3,955 ppb. Low levels of metals including arsenic, copper, chromium, lead and zinc were detected in all three samples. In addition, several pesticides/herbicides including dieldrin and gamma and alpha chlordane were detected at low levels in all three sampling locations. However, with the exception of the PAHs, there was no significant difference in the concentrations of contaminants detected in the upstream, adjacent and downstream samples.

SUMMARY OF SITE RISK

EPA conducted a baseline risk assessment to evaluate potential risks to human health and the environment associated with the current state of the site. The risk assessment addressed contaminants in the ground water, surface soils, subsurface soils, Mill Brook surface water and sediments.

Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks: Hazard Identification --identifies the contaminants of concern at the site based on several factors such as toxicity, frequency of occurrence, and concentration. Exposure Assessment- -estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water) by which humans are potentially exposed. Toxicity Assessment– determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). Risk Characterization--summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks.

The baseline risk assessment began with the selection of contaminants of concern that would be representative of site risks. Due to the limited number of samples collected as part of the Phase II FS, the baseline Risk Assessment conservatively considers all contaminants detected at the site as potential contaminants of concern (COCs). No contaminants were eliminated as COCs based on frequency of detection or concentration. Of the chemicals detected, only carbon disulfide and carbazole were eliminated due to their relative lack of toxicity. Tables 5 and 5A list all COCs (by media) and their frequency of detection at the site, respectively.

EPA's Risk Assessment identified the following eight potential exposure pathways by which the public could be

exposed to contaminant releases at the site under current and future land-use conditions: 1) ingestion of chemicals in filtered and unfiltered ground water; 2) ingestion of chemicals in surface soil; 3) dermal contact with chemicals in surface soil; 4) ingestion of chemicals in subsurface soil; 5) dermal contact with chemicals in subsurface soil; 6) ingestion of chemicals in Mill Brook sediments; 7) dermal contact with chemicals in Mill Brook sediments; and 8) dermal contact with chemicals in Mill Brook surface water. The exposure pathways considered are listed in Table 6.

For the purposes of this human health evaluation, potentially exposed populations include adjacent residents, trespassers and excavation workers. As the site is presently inactive and surrounded by a chain-link fence, the only receptors considered under the current land-use scenario were youth trespassers. Under the future land-use scenario, four potential receptors including youth trespassers, adult and child adjacent residents, and excavation workers were identified. As the site is currently zoned for light industrial use, an on-site residential scenario was not addressed in the risk assessment. Rather, a future adjacent resident land-use scenario was considered due to the site's proximity to residential development and the likelihood of continued residential use of adjacent areas.

The reasonable maximum exposure to COCs was evaluated in all cases. In addition, the central tendency exposure was evaluated for ground water and subsurface soils exposure pathways.

Under current EPA guidelines, the risk assessment considers the likelihood of carcinogenic (cancer causing) and non-carcinogenic effects due to exposure to COCs separately. It was assumed that the toxic effects of the site-related chemicals would be additive. Thus, carcinogenic and non-carcinogenic risk associated exposures to individual COCs were summed to indicate potential risks associated with mixtures of potential carcinogens and non-carcinogens, respectively.

Potential carcinogenic risks were evaluated using cancer slope factors (SFs) developed by EPA's Carcinogenic Risk Assessment associated with exposure to potentially carcinogenic chemicals. Table 6A lists the toxicity values for all COCs at the site. SFs are multiplied by the estimated intake of a potential carcinogen to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes the underestimation of the risk highly unlikely.

Carcinogenic Risk

For known or suspected carcinogens, EPA considers excess upper bound individual lifetime cancer risks of between 10-4 to 10-0 to be acceptable. This level indicates that an individual may have approximately one in ten thousand to one in a million chance of developing cancer over a 70-year lifetime, under specific exposure conditions at the site. A summary of the carcinogenic risk posed by each media at the site is presented below. A summary of the carcinogenic risks associated with the exposure to COCs in all media is found in Table 7.

Subsurface Soil, Surface Water and Sediments

As shown in Table 7, the results of the baseline risk assessment indicate that under current and future land-use conditions, all pathways of exposure to subsurface soil, surface water and sediments are within, or below EPA's acceptable risk range.

Surface Soil

Under future land-use conditions, the risk characterization revealed that the cancer risk associated with exposure to surface soil by an adjacent resident is 8 x 10-5 (eight in one hundred thousand). This risk is at the higher end of EPA's acceptable risk range. If the site were developed for residential use, the resulting risk due to exposure to surface soils would increase to approximately 2.2 x 10-4, which is also at the upper bounds of EPA's acceptable risk range.

Ground Water

Under future land-use conditions, the risk characterization revealed that the cancer risk associated with ingestion of shallow, on-site unfiltered ground water by a resident is 1 x 10-3, which exceeds EPA's acceptable risk range. This risk is solely due to elevated levels of arsenic present in the shallow, unfiltered ground water samples. During development of the monitoring wells, the shallow aquifer exhibited poor productivity. As a result, the unfiltered ground water samples were highly turbid and contained a high percentage of solids. This may suggest that the levels of arsenic detected in the unfiltered samples do not represent the condition of the ground water which would likely be ingested by an individual. Based on filtered ground water sampling results, the carcinogenic risk to a resident would be 3 x 10-4, which, although at the upper bounds, is within EPA's acceptable risk range.

Although EPA conservatively evaluated the risk from exposure to site ground water, it is not a likely future exposure pathway. As explained above, due to the low permeability of the bedrock aquifer, which prevents downward migration of the contaminants, it is expected that only the shallow aguifer has been impacted. In addition, the shallow site ground water discharges to Mill Brook. As all potable wells within a mile of the site are over 100 feet deep and are cased in the deep aguifer, it is improbable that a potable well would be installed in the shallow aquifer on the site. In addition, the poor productivity of the shallow aquifer would result in low yielding wells that could not provide sufficient potable water supply. Furthermore, most Edison Township residents depend on public water for their potable water supply. Based on these site conditions, EPA has concluded that future exposure to contaminated ground water underlying the site is highly unlikely.

Non-Carcinogenic Risk

Non-carcinogenic risks were assessed using a hazard index (HI) approach, which is based on a comparison of expected contaminant intakes and safe levels of intake. Reference Doses (RfDs), estimates of daily exposure levels for humans expected to be safe over a lifetime (including sensitive individuals), were developed by EPA for indicating the potential for adverse health effects (see Table 6A). Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) are compared with the RfDs to derive the hazard quotient for the contaminant in the particular medium. The HI is obtained by adding the hazard quotients for all compounds across all media that impact a particular receptor population.

An HI greater than 1.0 indicates that the potential exists for non-carcinogenic health effects to occur as a result of site-related exposures. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. A summary of the non-carcinogenic risks associated with exposure to COCs in all media at the site is found in Table 8.

Surface Soils, Surface Water and Sediments

As shown in Table 8, all exposure pathways involving ingestion of, or dermal contact with surface soils, sediments and surface water yield hazard indices less than 1.0. This indicates that adverse non-carcinogenic effects are not likely to occur through these exposure pathways.

Ground Water

Under future land-use conditions, the non-carcinogenic risk due to exposure to unfiltered ground water at the site yielded an HI of 5. This risk is largely due to the presence of arsenic in the site ground water. As previously discussed, EPA believes that due to the turbidity and high percentage of solids in the unfiltered ground water, the levels of arsenic detected may not represent the actual condition of the ground water which would likely be ingested by an individual. Site conditions would likely require that the ground water be filtered prior to consumption, and as exposure to filtered ground water yields an HI of 1.0, adverse non-carcinogenic effects are not expected to occur. In addition, as previously illustrated, exposure to site ground water is unlikely to occur.

Subsurface Soils

Under future land-use conditions, the non-carcinogenic risk due to exposure to subsurface soils by a future

excavation worker yielded an HI of 10, which is primarily due to the presence of arsenic.

As the HI for exposure to subsurface soils is greater than 1.0, there may be a concern for potential chronic health effects. However, because the risk is solely due to arsenic, the factors utilized to calculate the potential risk must be considered. For example, the non-carcinogenic risk due to exposure to subsurface soils is based upon the reasonable maximum exposure. This results in the most conservative exposure case and may overestimate the risk.

As previously stated, the central tendency, or average risk, should be considered in the risk management decision. Central tendency parameters considered for the Renora site include the following: use of the average concentration of arsenic (71 ppm) rather than the maximum concentration (721 ppm), which occurs in only one sample; and an ingestion rate of 100 mg/day rather than 480 mg/day, which accounts for excavation being performed using heavy equipment, thus limiting direct contact with the subsurface soil. The use of the central tendency values in the exposure scenario results in a decrease of the HI to 0.2, which indicates that adverse non-carcinogenic effects are not likely to occur.

The calculated risk also depends a great deal on a chemical's toxicity factor. The HI of 10 for arsenic is generated by comparing the chronic daily intake (CDI) to arsenic's RfD (which is a measure of arsenic's threshold for causing chronic adverse health effects). Because the RfD is based on chronic health effects, it is designed to be used for exposures greater than seven years in duration. The exposure duration for the excavation worker (65 days) is considered to be a sub-chronic RfDs for a number of compounds for use in calculating the risk of short-term exposure. However, EPA has not derived a sub-chronic RfD for arsenic, which would be the appropriate toxicity factor to use in the excavation scenario. Consequently, applying a chronic RfD, which is typically an order of magnitude greater than the sub-chronic Rfd, to a sub-chronic exposure scenario may result in an over-estimation of the potential risk; hence, if a sub-chronic RfD was available for arsenic, it could potentially reduce the HI up to one order of magnitude.

Based on EPA's evaluation of the reasonable maximum exposure and the central tendency risk, EPA does not believe that exposure to subsurface soils is likely to cause adverse non-carcinogenic health effects. This belief is further supported by the use of a conservative toxicity factor for arsenic. In addition, the elevated arsenic concentrations are located eight to ten feet below the surface, whereas the depth to the water table at the site ranges from five to fifteen feet. Future excavation activities would most likely be confined to areas above the water table, where the highest concentrations of arsenic would not be encountered.

Ecological Risk Assessment

A four-step process is utilized for assessing site-related ecological risks for a reasonable maximum exposure scenario: Problem Formulation - a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study. Exposure Assessment--a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors; and measurement or estimation of exposure point concentrations. Ecological Effects Assessment–-literature reviews, field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors. Risk Characterization--measurement or estimation of current and future adverse effects.

As shown in Table 9, the contaminants of concern identified in the environmental risk assessment include: tetrachloroethane; PAHs; dieldrin; heptachlor; arsenic; chromium; and lead. The ecological risk assessment quantitatively evaluated the exposure pathways through which ecological receptors could be exposed to the contaminants of concern. The most probable exposure pathways for species inhabiting the site include ingestion of contaminated biota in the food chain and contact with or ingestion of contaminants present in surface water and sediments. Surface soils, which are primarily contaminated with PAHs, also present a potential exposure medium. Receptor species, such as small mammals inhabiting the site, could be directly exposed to PAHs in site surface soils through burrowing and grooming activities. However, due PAHs' tendency to become strongly associated with organic matter in the soil, it is unlikely that exposure to these contaminants through food chain transfer or volatilization would occur.

Potential risks to ecological receptors from contaminants present in surface water and sediments were assessed by calculating the ratio of the medium-specific average and maximum contaminant concentrations to the criteria. Criteria utilized for surface water and sediment risk calculations are the Federal Ambient Water Quality Criteria (FAWQC) and National Oceanic and Atmospheric Administration (NOAA) values, respectively. If the resulting ratio or risk index is greater than 1.0, the biota may be at risk of an adverse effect from that contaminant. A total risk index was calculated for surface water and sediments by summing chemical-specific risk indices. It follows that a total risk index greater than 1.0 indicates that exposure to all contaminants of ecological concern within that medium may pose a risk to organisms.

As shown in Table 10, the results of the ecological risk assessment indicate that the average and maximum total acute risk indices for surface water are 2.0 and 2.3, respectively. This risk is driven by chromium, which is the only contaminant with a risk index greater than 1.0. These results do not take into account that the FAWQC used in the comparison were developed for hexavalent chromium, which is considerably more toxic than trivalent chromium.

As shown in Table 11, the average and maximum total risk indices for sediments are 19 and 33, respectively. This risk is driven by pesticides. The elevated levels of these pesticides may have adverse impacts on sensitive benthic organisms inhabiting Mill Brook; however, these pesticides are not site-related. In addition, average and maximum concentrations of PAHs and lead detected are slightly above levels reported to adversely impact sensitive benthic organisms. However, in January 1993, EPA conducted a bioassessment of Mill Brook. The results of this assessment indicated that although the site was determined to have a moderate impact on water quality, no adverse effects in the macroinvertebrate community were observed between upstream and downstream locations.

Field visits have indicated that the Renora site and adjacent portion of Mill Brook provide a habitat for a variety of species including birds, reptiles and small mammals. Due to the shallow depth of the brook during low flow periods, it is unlikely that fish would permanently inhabit that portion of the brook adjacent to the Renora site. However, fish may migrate upstream and utilize this portion of the stream as a spawning area. According to the Fish and Wildlife Services, no records presently exist for rare species or natural communities at the site.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data.

Uncertainty in environmental sampling at the site arises in part from the limited number of samples collected during the Phase II FS field investigation. In addition, environmental chemistry-analysis error may stem from errors inherent in the analytical methods and characteristics of the matrix being sampled. Thus, the amount of sampling data rejected during data qualification may also serve to increase uncertainty by reducing the amount of data available to characterize the site.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure. For example, the ground water ingestion scenario is likely to overestimate risk because it assumes that private wells installed on or in the immediate vicinity of the site would generate a sufficient potable

water supply and that maximum concentrations detected in the on-site monitoring wells would be found in private wells. In addition, the excavation worker scenario for exposure to subsurface soils may also overestimate risk because it conservatively assumes 65 days of exposure to the maximum detected concentration of arsenic, which is found in only one location, and ingestion of 480 mg/day of soil at this location. These conservative assumptions may result in an overestimation of site risk.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the Risk Assessment provides upper-bound estimates of the risks to populations near the site, and is highly unlikely to underestimate actual risks related to the site.

More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the Risk Assessment report.

RISK ASSESSMENT SUMMARY

The risks associated with all media sampled at the site were quantitatively assessed for human health and the ecological environment. Results for the human health risk assessment indicated that Mill Brook surface water and sediments do not pose an unacceptable risk of carcinogenic or non-carcinogenic health effects and, therefore, do not require remediation. In addition, because ground water use at the site was determined to be highly unlikely, it was eliminated as a pathway of exposure and does not require remediation. The subsurface soils do not pose a risk of carcinogenic or non-carcinogenic health effects above EPA's acceptable risk levels and do not require remediation.

The carcinogenic risk posed by potential exposure to the surface soils at the site was determined to be at the high end of EPA's acceptable risk range. Due to the site's proximity to residential development and the likelihood that it will be developed for use in the future, exposure to contaminated surface soil at the site would pose a potential health threat to human health. Therefore, the surface soils at the site are considered the only pathway of concern and will require remediation.

The ecological risk assessment determined that the levels of contaminants detected in the surface water and sediments may adversely impact sensitive benthic organisms. Therefore, remediation of the surface soils will also benefit the environment by limiting surface runoff of contaminants to Mill Brook.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in the amended ROD, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

REMEDIAL ACTION OBJECTIVE

Remedial action objectives are specific goals to protect human health and the environment; they specify the contaminant(s) of concern, the exposure route(s), receptor(s), and acceptable contaminant level(s) for each exposure route. These objectives are based on available information and standards such as Applicable or Relevant and Appropriate Requirements (ARARs) and risk-based levels established in the risk assessment.

The following remedial action objectives were established for the ROD Amendment:

- To prevent direct contact with and ingestion of contaminated surface soils; and
- To prevent runoff of contaminants to Mill Brook.

DESCRIPTION OF ALTERNATIVES

CERCLA §121(b)(1), 42 U.S.C. §9621(b)(1), mandates that a remedial action must be protective of human health and the environment, cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a

preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity or mobility of the hazardous substances, pollutants and contaminants at a site. CERCLA §121(d), 42 U.S.C. §9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

This amended ROD evaluates in detail, four remedial alternatives for addressing the contamination associated with the Renora site. The time to implement each remedial alternative reflects the time required to design and construct or implement the remedy, but may not include the time to negotiate with the responsible parties, or procure contracts for design and construction. The costs presented for each alternative include capital costs and operation and maintenance (O&M) costs over a thirty year period. For comparison purposes, the estimated present worth was calculated over a thirty year period using a discount rate of 5% to determine costs in 1994 dollars. In addition, a contingency of 20% of the total capital and O&M costs is included in the estimated present worth.

The remedial alternatives are:

Alternative 1: No Further Action

Estimated Capital Cost: $ 2,500
Estimated O &M Cost: $ 55,640
Estimated Present Worth Cost: $ 69,768
Estimated Implementation Period: 0 years

The Superfund program requires that the no-action alternative be considered as a baseline for comparison to other alternatives.

Under this alternative, EPA would take no further action to prevent exposure to contaminated surface soils at the site. Capital costs shown above reflect the funds required to properly close the existing monitoring wells. Long-term monitoring, including an annual site inspection, would be conducted to determine if site conditions have deteriorated.

Because this alternative would result in contaminants remaining on the site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Details of the costs associated with Alternative 1 are shown in Table 12.

Alternative 2: Asphalt Cap/Access Restrictions

Estimated Capital Cost: $189,230
Estimated O & M Cost: $198,850
Estimated Present Worth Cost: $ 465,672
Estimated Implementation Period: 1 year

Alternative 2 provides for the placement of an asphalt cap over the site. The conceptual design for the asphalt cap includes storm water management controls, and the construction of an asphalt cap over the entire site. O&M includes annual site inspections, repairs to the perimeter fence and cap as necessary, and two cap resurfacings after fifteen and thirty years. Details of the costs associated with Alternative 2 are shown in Table 13.

Alternative 2 provides for restricted access to the site through the long-term maintenance of the existing perimeter fence. Because Alternative 2 would result in contaminants remaining on the site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

A summary of the Applicable or Relevant and Appropriate Requirements associated with Alternative 2 is provided in the "Summary of Comparative Analysis of Alternatives", below.

Alternative 3: FML Clay Cap/Access Restriction

Estimated Capital Cost: $ 456,741
Estimated O&M Cost: $ 138,638
Estimated Present Worth Cost: $ 714,455
Estimated Implementation Period: 1 year

Alternative 3 provides for placement of a flexible membrane liner (FML)/clay cap over the entire site. The conceptual design for the FML/clay cap includes provision of storm water management controls, the placement of a FML/clay cap over the site, and placement of two feet of vegetative cover over the site as the final layer. O&M includes annual site inspections, repairs to the perimeter fence and cap as necessary, and maintenance of the vegetative cover over thirty years. Details of the costs associated with Alternative 3 are shown in Table 14.

As in Alternative 2, this alternative provides for restricted access to the site through long-term maintenance of the existing perimeter fence.

Because Alternative 3 would result in contaminants remaining on the site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

A summary of the ARARs associated with Alternative 2 is provided in the "Summary of Comparative Analysis of Alternatives", below.

Alternative 4: Excavation/Off-Site Disposal

Estimated Capital Cost: $ 2,344,050
Estimated O&M Cost: $ 0
Estimated Present worth Cost: $ 2,812,860
Estimated Implementation Period: 1.3 years

Alternative 4 includes excavation and off-site disposal of the top two feet of contaminated surface soil (the pathway of concern) and any debris that may be encountered. The volume of soil to be excavated is estimated to be 3,900 cubic yards. Following the excavation, the site would be backfilled with certified clean fill. No post-excavation sampling would be required as the entire pathway of concern would be eliminated. This alternative does not require long-term maintenance of the perimeter fence; however, the existing perimeter fence would remain in place. As the contaminated surface soils of concern will be removed and replaced with certified clean fill, there will be no O&M costs associated with this alternative.

Because one surface soil sample exceeded the TCLP analysis for lead and the soil contains elevated levels of semi-VOCs, the soil may not be accepted for disposal at a non-hazardous disposal facility. This determination will be made prior to the off-site disposal of the contaminated surface soils; treatment will be performed as necessary and may increase the cost of this alternative. Concrete debris and scrap metal, if encountered in the surface soils, may be transported to a recycling facility for subsequent re-use. Details of the costs associated with Alternative 4 are shown in Table 15.

A five-year review of the remedial action may not be required because this alternative will not result in hazardous substances remaining on the site above health-based levels.

A summary of the ARARs associated with Alternative 2 is provided in the "Summary of Comparative Analysis of Alternatives", below.

SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy, EPA considered the factors set out in CERCLA §121, 42 U.S.C. §9621, by conducting a detailed analysis of the viable remedial alternatives pursuant to the NCP, 40 CFR §300.430(e)(9) and OSWER Directive 9355.3-01. The detailed analysis consisted of an assessment of the individual alternatives against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

The following "threshold" criteria must be satisfied by any alternative in order to be eligible for selection:

1. Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. Compliance with ARARs addresses whether or not a remedy would meet all of the applicable (legally enforceable), or relevant and appropriate (requirements that pertain to situations sufficiently similar to those encountered at a Superfund site such that their use is well suited to the site) requirements of federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

The following "primary balancing" criteria are used to make comparisons and to identify the major trade-offs between alternatives:

3. Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

4. Reduction of toxicity, mobility, or volume via treatment refers to a remedial technology's expected ability to reduce the toxicity, mobility or volume of hazardous substances, pollutants or contaminants at the site.

5. Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation periods until cleanup goals are achieved.

6. Implementability refers to the technical and administrative feasibility of a remedy, including the availability of materials and services needed.

7. Cost includes estimated capital and operation and maintenance costs, and the present-worth costs.

The following "modifying" criteria are considered fully after the formal public comment period on the Proposed Plan is complete:

8. State acceptance indicates whether, based on its review of the Phase II FS report and the Proposed Plan, the State

supports, opposes, and/or has identified any reservations with the preferred alternative.

9. Community acceptance refers to the public's general response to the alternatives described in the Proposed Plan and the Phase II FS report. Factors of community acceptance to be discussed include support, reservation, and opposition by the community.

A comparative analysis of the remedial alternatives based upon the evaluation criteria noted above follows.

Threshold Criteria

Overall Protection of Human Health and the Environment

As Alternative 1, No Further Action, does not include any action to prevent direct contact with contaminated surface soils or run-off into Mill Brook, it is not considered to be protective of human health and the environment. Because no remedial activities would be implemented under this alternative, the risks posed to human health and the environment would be the same as the risks identified in the baseline risk assessment.

Under Alternative 2, an asphalt cap would be placed over the site to prevent direct contact with and ingestion of contaminated surface soils and thus, would be protective of human health and environment. The asphalt cap also would limit off-site migration of contaminants that may occur through infiltration and storm water runoff. The perimeter fence would restrict unauthorized entry to the site.

As with Alternative 2, Alternative 3, which includes placement of an FML/clay layer over the site, provides protection of human health and the environment by preventing direct contact with and ingestion of contaminated surface soils. The FML/clay cap would also limit off-site migration of contaminants and the perimeter fence would restrict unauthorized entry to the site.

Alternative 4 provides a greater degree of protection to human health and the environment than Alternatives 2 and 3 because it provides for the removal of the contaminated surface soils and replacement with clean fill. By eliminating the pathway of concern, Alternative 4 would address the risks found to be unacceptable by EPA. In addition, the disposal facility utilized under Alternative 4 would be properly permitted and operated with adequate environmental protection measures, making this alternative the only permanent remedy for the site.

Compliance with Applicable Relevant and Appropriate Requirements

ARARs are those federal or state environmental and public health regulations that apply to remedial activities at the site. The technologies and methods proposed for use under the surface soil remedial alternatives would be designed and implemented to satisfy all corresponding ARARs, as described below. All ARARs associated with remediation of the site are listed in Table 16.

Chemical-Specific ARARs

Chemical-specific ARARs are health- or environmentally-based numerical values limiting the amount of a contaminant that may be discharged to, or allowed to remain in the environmental media. The remedial objective of the proposed alternatives is to address contaminated surface soils at the site. Therefore, federal risk-based soil standards were selected as the chemical-specific cleanup standards for the site.

Alternative 1 is not expected to attain chemical-specific ARARs in the surface soils as it does not involve active remediation.

Alternatives 2 and 3, which both involve placement of a surface cap over the entire site, are subject to the same chemical-specific ARARs. Both alternatives provide a physical barrier that would protect human health and the environment by preventing direct contact and ingestion of contaminants present in surface soil. As

such, Alternatives 2 and 3 would be expected to address the federal chemical-specific cleanup standards as long as the integrity of the surface caps is maintained.

Alternative 4 is expected to achieve the federal chemical-specific cleanup standards for soil remediation as all surficial contamination of concern will be removed and disposed of off site.

Action-Specific ARARs

Action-specific ARARs are either technology or activity based limitations which apply to remedial actions.

Action-specific ARARs are not applicable to Alternative 1 because it does not involve active remediation.

The action-specific ARARs associated with Alternatives 2 and 3 include the following: National Ambient Air Quality Standards, 40 CFR 50 for dust and air emission control during construction activities; New Jersey Air Pollution Act N.J.A.C. &; 27-1 et seq. for dust and air emission control during construction activities; occupational Safety and Health Act, 29 CFR Parts 1904, 1910 and 1926 to ensure the safety of workers during construction activities; and RCRA, 40 CFR 264.310(a), which applies only to Alternative 3, to ensure the cap satisfies performance standards.

Alternatives 2 and 3 are expected to achieve all ARARs listed above through air monitoring during construction activities at the site, providing workers with proper health and safety training and appropriate safety equipment during construction activities and by ensuring that the FML/clay cap satisfies RCRA performance standards.

In addition to those action-specific ARARs associated with Alternatives 2 and 3 listed above, the following ARARs would be associated with Alternative 4 and the transport and off-site disposal of hazardous waste: RCRA, 40 CFR Parts 261, 264 and 270 for the removal, transport and disposal of hazardous waste; Department of Transportation, 40 CFR Parts 107 and 171-179 for transport of hazardous waste; New Jersey Solid and Hazardous Waste Management Regulations, N.J.S.A. 13:E-1; New Jersey Solid Waste Management Act, N.J.A.C. 26-6.2; and New Jersey Interdistrict and Intradistrict Solid Waste Flows, N.J.A.C.:26- 6.2. The New Jersey regulations listed apply to removal and off-site disposal of hazardous waste.

Alternative 4 is expected to achieve associated ARARs through proper handling and shipment of the contaminated surface soil to an EPA-approved disposal facility.

In addition, because one sample exceeded the TCLP limit for lead, it is possible that RCR`A land disposal restriction requirements would be applicable to Alternative 4 and the excavated soil would have to meet treatment standards before being disposed of in a hazardous waste landfill. This will be determined prior to the off-site disposal of the excavated soil.

Location-Specific ARARs

Location-specific ARARs restrict activities or limit concentrations of contaminants because the site is in a special location such as a floodplain, wetland or historical area.

Location-specific ARARs are not applicable to Alternative 1 because it does not involve active remediation.

The location specific ARARs associated with Alternatives 2, 3 and 4 include the Fish and Wildlife Coordination Act, 16 U.S.C. 661 et seq., and Executive Order 11988 (40 CFR 6, Appendix A), Floodplain Management Act, as the site is located in the 500-year floodplain.

Alternatives 2, 3 and are expected to achieve the location-specific ARARs listed above. Compliance with the federal Floodplain Management Act will be achieved by ensuring that the selected remedial action at the site will not affect the natural and beneficial values served by the floodplain.

Primary Balancing Criteria

Long-Term Effectiveness and Permanence

Alternative 1 is not considered to be effective over the long term as it would not remove or contain contaminants in the surface soils. Therefore, Alternative 1 would not prevent direct contact with, or ingestion of contaminated surface soils. In addition, contamination may continue to migrate off site through infiltration and surface water runoff. As required by CERCLA, a five-year review is required to evaluate site conditions. If justified by the review, remedial actions may be required to address the contaminated surface soils.

Alternative 2 is expected to eliminate exposure to contaminants of concern over the long term, provided that the asphalt cap is properly maintained. To ensure the long-term reliability of the asphalt cap, it will require periodic maintenance, including patching of cracks and resurfacing. Annual inspections would be conducted to examine the condition of the cap and determine if repairs are necessary.

The asphalt cap has a life expectancy of approximately 15 years, at which time resurfacing would be required. The life expectancy of the cap depends upon such factors as usage and weathering. If warranted, the asphalt cap would be resurfaced prior to the 15-year life expectancy. The existing perimeter fence would be maintained to restrict access to the site. This would limit contact with contaminated surface soil if it is exposed before the cap can be replaced or repaired.

Because Alternative 2 would result in contaminants remaining on the site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

As with Alternative 2, the long-term effectiveness of Alternative 3 is expected to be effective in eliminating exposure to contaminants of concern over the long term, provided that the FML/clay cap is properly maintained. To ensure the long-term reliability of the FML/clay cap, it will require periodic maintenance, including mowing and fertilization of the vegetative cover. Annual inspections would be conducted to examine the condition of the cap and determine if restoration of the vegetative cover is necessary.

The FML/clay cap has a life expectancy of 30 or more years. The existing perimeter fence would be maintained to restrict access to the site and limit contact with contaminated surface soil if it is exposed before the cap can be repaired.

As with Alternative 2, because Alternative 3 would result in contaminants remaining on the site, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

As Alternative 4 involves the complete removal of the contaminated surface soil, it is the most effective alternative over the long term. Because there would be no possibility of risk due to exposure to contaminated surface soil in the future, no maintenance would be required; however, the perimeter fence would remain in place.

Reduction of Toxicity. Mobility, and Volume

Alternative 1 would not involve any containment, removal, or treatment of contaminated surface soil. Therefore, this alternative would not result in any reduction of toxicity, mobility or volume. Contaminants would remain on the site and continue to migrate off site via infiltration and storm water runoff.

Reduction of the toxicity, mobility, and volume of the contaminants in the surface soil is not applicable to Alternatives 2, 3 and 4 because these alternatives do not include treatment of the contaminated surface soil.

As previously discussed, the soil excavated under Alternative 4 may require treatment before it is disposed of in an off-site landfill. The type of treatment utilized would be selected prior to disposal. Such treatment may result in a reduction of the toxicity and mobility of contamination.

Short-Term Effectiveness

As there are no remedial activities being implemented under Alternative 1, there would be no additional risks posed to human health and/or the environment in the short term.

The time required to implement Alternatives 2 and 3 is approximately 1 year. No additional risks to human health and the environment are expected as a result of implementing these alternatives. Under both alternatives, worker protection may be required to prevent contact with contaminated surface soils during on-site activities. Health and safety training of workers would be required and workers would be provided with protective equipment during construction and O&M activities.

The time required to implement Alternative 4 is approximately 16 months. Due to the large amounts of soil being handled during soil excavation activities, potential risks to on-site workers resulting from implementation of Alternative 4 are expected to be slightly higher than for Alternatives 2 and 3. Worker protection would be required to prevent direct contact with contaminated surface soil during excavation activities. If necessary, dust control measures would also be implemented during excavation activities. In addition, due to the high volume of traffic expected during soil excavation activities, measures would be taken to ensure that appropriate traffic controls are implemented. As with Alternatives 2 and 3, workers would be trained in health and safety and protective equipment would be provided during construction activities.

Implementability

There are no implementability issues concerned with Alternative 1 since no remedial action would be taken. Limited resources would be required to conduct long-term monitoring and the required five-year review.

There are no implentability concerns posed by Alternatives 2 and 3, as they utilize conventional construction practice and equipment. Materials required for both the asphalt and FML/clay caps are readily available. Of the two capping alternatives, Alternative 2 would be more easily implemented than Alternative 3.

Alternative 4 may be more difficult to implement than Alternatives 2 and 3 due to the large volume of material being excavated and the associated handling and segregation requirements. However, Alternative 4 would utilize conventional construction practices and equipment that is readily available.

Cost

The only capital cost associated with Alternative 1 is $2,500 required to conduct proper closure of the monitoring wells. The total capital and O&M cost, which includes annual and five-year inspections, is estimated to be $69,768 over a thirty-year period.

The present worth cost for Alternative 2, which is the least expensive alternative, is estimated to be $465,672 over a thirty year period. The present worth cost for Alternative 3 is higher than Alternative 2 and is estimated to be $714,455 over a thirty year period. The total present worth cost for Alternative 4 is estimated to be $2,812,860. Although Alternative 4 is the most costly alternative, it provides the greatest protection of human health and the environment and is the only permanent solution to site contamination.

Modifying Criteria

State Acceptance

The State of New Jersey can not concur with the selected remedy unless institutional controls are established.

Community Acceptance

EPA solicited comment from the community on the proposed remedial alternatives for the surface soil contamination at the site. The attached responsiveness summary addresses all verbal comments received at the

public meeting and written comments received during the public comment period.

SELECTED REMEDY

After reviewing the alternatives and public comments, EPA and NJDEP have determined that Alternative 4 is the appropriate remedy for the site, because it best satisfies the requirements of CERCLA §121, 42 U.S.C. §9621, and the NCP's nine evaluation criteria for remedial alternatives, 40 CFR §300.430(e)(9).

The major components of the modified remedy are as follows:

1. Excavation and off-site disposal of the top two feet of contaminated surface soil and any debris at an EPA approved landfill.

2. Backfill of the site with certified clean fill.

STATUTORY DETERMINATIONS

As previously noted, CERCLA §121(b)(1), 42 U.S.C. §9621(b)(1), mandates that a remedial action must be protective of human health and the environment, cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at a site. CERCLA §121(d), 42 U.S.C. §9621(d), further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

For the reasons discussed below, EPA has determined that the selected remedy for the Renora site meets the requirements of CERCLA §121, 42 U.S.C. §9621.

Protection of Human Health and the Environment

Of the four alternatives evaluated, the selected remedy for contaminated surface soil provides the greatest protection of human health and the environment by removing the contaminated surface soils; the pathway of concern. Alternatives 2 and 3 may experience breaches in the caps resulting in exposure to contaminated surface soil. The selected remedy eliminates the risks associated with possibility of future exposure through removal of the pathway of concern.

Compliance with ARARs

The selected remedy will be designed to meet all chemical-specific, action-specific, and location-specific ARARs discussed under the "Summary of Comparative Analysis of Alternatives", above.

Cost Effectiveness

The cost effectiveness of an alternative is determined by weighing the cost against the alternative's ability to achieve ARARs and remedial action objectives. The selected remedy is cost effective as it has been determined to provide the greatest overall effectiveness in proportion to its cost. Although Alternatives 2 and 3 achieve ARARs and remedial action objectives and are less costly than the selected remedy, neither alternative completely eliminates the potential for exposure to contaminated surface soil. Furthermore, there are no O&M costs associated with the selected remedy, as opposed to Alternatives 2 and 3 which would require lifetime maintenance.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy utilizes permanent solutions and treatment technologies to the maximum extent practicable and provides the best balance of trade-offs with respect to the nine evaluation criteria previously discussed. Of the three action alternatives considered to address the contaminated surface soils at the

site, the selected remedy is the only permanent remedy since the contaminated surface soil will be completely removed and disposed of off site. In addition, the complete removal of the contaminated surface soils will provide a greater degree of flexibility for future development of the site. Furthermore, unlike Alternatives 2 and 3, the selected remedy does not rely upon long-term maintenance to be protective of human health and the environment.

Preference for Treatment as a Principal Element

As previously described under the "Site History and Enforcement Activities", bioremediation and solidification/stabilization treatability studies were conducted on the PAH-contaminated soils; however, neither treatment technology was successful in treating the PAH-contamination. In addition, as other treatment technologies available for the Renora site would not afford a greater overall benefit, EPA's selected surface soil remedy does not presently provide for treatment of contaminated surface soils.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Renora site was released for public comment on July 20, 1994. The Proposed Plan identified Alternative 4 as the preferred remedy for the site. EPA has reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, EPA has determined that no significant changes to the remedy, as it was originally defined in the Proposed Plan, were necessary.

APPENDIX I

FIGURES

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APPBNDIX II

TABLES

TABLE 1

Groundwater Samples Analytical Results

Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	RW-2		RW-2-AD		RW-3		RW-3-AD	
Enseco Laboratory Sample No.:	020974-0006		020974-0006		020974-0005		020974-0005	
Sampling Date:	4/1/92		4/1/92		4/1/92		4/1/92	
Comments:	Unfiltered		Filtered		Unfiltered		Filtered	
Volatile Organic Compounds (ug/l)								
chloroethane	ND		NT		29		NT	
2-butanone	ND		NT		2		NT	
toluene	ND		NT		ND		NT	
Semi-Volatile Organics Compounds (ug/l)								
4-methylphenol	ND		NT		ND		NT	
naphthalene	ND		NT		ND		NT	
2-methylnaphthalene	ND		NT		ND		NT	
acenapthene	ND		NT		2	J	NT	
dibenzofuran	ND		NT		ND		NT	
fluorene	ND		NT		1	J	NT	
phenanthrene	ND	UJ	NT		ND	UJ	NT	
anthracene	ND		NT		ND		NT	
carbazole	ND		NT		ND		NT	
		ND						
fluoranthene	2	J	NT		ND		NT	
pyrene	2	J	NT		ND		NT	
bis(2-ethylhexyl)phthalate	ND		NT		ND		NT	
Total Polyaromatic Hydrocarbons [PAHS] (ug/l)	4		ND		3		ND	
Metals (ug/l)								
Arsenic	49.1	J	15.5		R		R	
Cadmium	ND		ND		11	J	ND	
Chromium	14.7	J	ND		28.4	J	ND	
Lead	35.6	J	ND		130	J	ND	
Zinc	176	J	[18.3]		831	J	31.5	
Chromium (+6)(ug/l)	ND		NT		0.026		NT	

Notes:

ND: Not Detected
NT: Not Tested
[]: Concentration Detected Between IDL and CRQL
UJ: Compound Not Detected, Quantitation Limit Estimated
J: Estimated Concentration
R: Data Point Rejected By Quality Assurance Department

Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

NOTE: These tables have been revised in accordance with QA/QC review resuts, 7/30/92.

TABLE 1 - CONTINUED

Groundwater Sample Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	RW-6		RW-6-AD		RW-7		RW-7-AD	
Enseco Laboratory Sample No.:	020974-0004		020974-0004		020974-0002		020974-0002	
Sampling Date:	4/1/92		4/1/92		4/1/92		4/1/92	
Comments:	Unfiltered		Filtered		Unfiltered		Filtered	
Volatile Organic Compounds (ug/l)								
chloroethane	ND		NT		ND	UJ	NT	
2-butanone	ND		NT		ND		NT	
toluene	ND		NT		ND		NT	
Semi-Volatile Organics Compounds (ug/l)								
4-methylphenol	2	J	NT		ND		NT	
naphthalene	ND		NT		3	J	NT	
2-methylnaphthalene	ND		NT		6	J	NT	
acenaphthene	ND		NT		20		NT	
dibenzofuran	ND		NT		11		NT	
fluorene	ND		NT		16		NT	
phenanthrene	ND	UJ	NT		10		NT	
anthracene	ND		NT		3	J	NT	
carbazole	ND		NT		1	J	NT	
fluoranthene	ND		NT		4	J	NT	
pyrene	ND		NT		2	J	NT	
bis(2-ethylhexyl)phthalate	ND		NT		3		NT	
Total Polyaromatic Hydrocarbons [PAHS] (ug/l)	2		ND		45		ND	
Metals (ug/l)								
Arsenic		R		R	92.9	J	82.2	
Cadmium	ND		ND		ND		ND	
Chromium	15.2	J	ND		ND		ND	
Lead	42.5	J	ND			R	ND	
Zinc	90	J	36.3		45.3	J	[14.7]	
Chromium (+6)(ug/l)	0.011		NT		ND		NT	

Notes:
ND: Not Detected
NT: Not Tested
[]: Concentration Detected Between IDL and CRQL
UJ: Compound Not Detected, Quantitation Limit Estimated
J: Estimated Concentration
R: Data Point Rejected By Quality Assurance Department
Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)
NOTE: These tables have been revised in accordance with QA/QC review results, 7/30/92.

TABLE 1 - CONTINUED

Groundwater Sample Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	RW-7A*		RW-7A-AD*	Trip Blank	Field Blank	
Enesco Laboratory Sample No.:	020974-0003		020974-0003		020974-0007	020974-0001
Sampling Date:	4/1/92		4/1/92	4/1/92	4/1/92	
Comments:	Unfiltered		Filtered	Unfiltered	Unfiltered	
Volatile Organic Compounds (ug/l)						
chloroethane	ND	UJ	NT	ND	ND	
2-butanone	ND	J	NT	ND	ND	
toluene	1	J	NT	ND	ND	
Semi-Volatile Organics Compounds (ug/l)						
4-methylphenol	ND		NT	NT	ND	
naphthalene	4	J	NT	NT	ND	
2-methylnaphthalene	7	J	NT	NT	ND	
acenaphthene	20		NT	NT	ND	
dibenzofuran	11		NT	NT	ND	
fluorene	16		NT	NT	ND	
phenanthrene	11		NT	NT	ND	
anthracene	4	J	NT	NT	ND	
carbazole	1	J	NT	NT	ND	
fluoranthene	4	J	NT	NT	ND	
pyrene	2	J	NT	NT	ND	
bis(2-ethylhexyl)phthalate	ND		NT	NT	ND	
Total Polyaromatic Hydrocarbons [PAHs] (ug/l)	49		ND	ND	ND	
Metals (ug/l)						
Arsenic	98.5	J	82.8	NT	ND	
Cadmium	ND		ND	NT	ND	
Chromium	ND		ND	NT	ND	
Lead		R	ND	NT	4.9	
Zinc	[13.3]	J	ND	NT	[3.9]	
Chromium (+6)(ug/l)	ND		NT	NT	ND	

Notes:
*: Field Duplicate Sample
ND: Not Detected
NT: Not Tested
[]: Concentration Detected Between IDL and CRQL
UJ: Compound Not Detected, Quantitation Limit Estimated
J: Estimated Concentration
R: Data Point Rejected By Quality Assurance Department

Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

NOTE: These tables have been revised in accordance with QA/QC review results, 7/30/92.

TABLE 1 - CONTINUED

Groundwater Sample Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

	Sample ID:	Field Blank
	Enseco Laboratory Sample No.:	020974-0001
	Sampling Date:	4/1/92
	Comments:	Filtered
Volatile Organics Compounds (ug/l)		
chloroethane		NT
2-butanone		NT
toluene		NT
Semi-Volatile Organics Compounds (ug/l)		
4-methylphenol		NT
naphthalene		NT
2-methylnaphthalene		NT
acenaphthene		NT
dibenzofuran		NT
fluorene		NT
phenanthrene		NT
anthracene		NT
carbazole		NT
fluoranthene		NT
pyrene		NT
bis(2-ethylhexyl)phthalate		NT
Total Polyaromatic Hydrocarbons [PAHs] (ug/l)		NT
Metals (ug/l)		
Arsenic		ND
Cadmium		ND
Chromium		ND
Lead		ND
Zinc		[2.5]
Chromium (+6)(ug/l)		NT

Notes:
ND: Not Detected

NT: Not Tested

[]: Concentration Detected Between IDL and CRQL

Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 2

Soil Boring and Test Pit Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	TB-II-1-2		TB-II-1-2A		TB-II-1-10		TB-II-2-2		TB-II-2-6
Enseco Laboratory Sample No.:	020563-0001		020563-0003		020563-0002		020563-0004		020563-0005
Sampling Date:	3/11/92		3/11/92		3/11/92		3/11/92		3/11/92
Comments:			Field Duplicate						
Volatile Organic Compounds (ug/kg)									
methylene chloride	13	U	12	U	NT		11	U	NT
acetone	ND		33		NT		11	J	NT
carbon disulfide	ND		ND		NT		ND		NT
2-butanone	ND		5	J	NT		ND		NT
1,1,1-trichloroethane	ND		ND		NT		ND		NT
benzene	ND		ND		NT		ND		NT
2-hexanone	ND		ND		NT		ND		NT
tetrachloroethane	ND		ND		NT		ND		NT
toluene	ND		ND		NT		11	U	NT
ethylbenzene	ND		ND		NT		ND		NT
xylene (total)	ND		2	J	NT		1	J	NT
Semi-Volatile Organics Compounds (ug/kg)									
4-methylphenol	ND	UJ	ND	UJ	ND		ND		1400 J
2,4-dimethylphenol	ND	UJ	ND	UJ	ND		ND		1100 J
naphthalene	ND	UJ	ND	UJ	ND		ND		ND UJ
2-methylnaphthalene	ND	UJ	ND	UJ	ND		ND		ND UJ
acenaphthylene	260	J	ND	UJ	ND		190	J	ND UJ
acenaphthene	280	J	ND	UJ	ND		ND		ND UJ
dibenzofuran	250	J	ND	UJ	ND		ND		ND UJ
fluorene	600	J	ND	UJ	ND		ND		ND UJ
phenanthrene	3400	J	970	J	3400	J	900	J	ND UJ
anthracene	840	J	260	J	880	J	240	J	ND UJ
carbazole	ND	UJ	ND	UJ	ND		ND		ND UJ
fluoranthene	4000	J	1600	J	5700	J	1400	J	600 J
pyrene	4300	J	1800	J	6700		1500	J	650 J
butylbenzylphthalate	1100	J	ND	UJ	ND		ND		ND UJ
benzo(a)anthracene	1700	J	670	J	2400	J	640	J	ND UJ
chrysene	1700	J	690	J	3700	J	680	J	390 J
bis(2-ethylhexyl)phthalate	2100	UJ	2000	UJ	ND		ND		ND UJ
di-n-octylphthalate	ND	UJ	ND	UJ	ND		ND		ND UJ
benzo(b)fluoranthene	2300	J	960	J	4800	J	1100	J	550 J
benzo(k)fluoranthene	920	J	400	J	1700	J	470	J	ND UJ
benzo(a)pyrene	1700	J	740	J	2900	J	820	J	ND UJ
indeno(1,2,3-cd)pyrene	680	J	300	J	1300	J	440	J	ND UJ
dibenz(a,h)anthracene	ND	UJ	ND	UJ	ND		ND		ND UJ
benzo(g,h,i)-perylene	360	J	ND	UJ	720	J	250	J	ND UJ

Total Polyaromatic Hydrocarbons [PAHs](ug/kg)	22040		8410		34200		8440		2190
Metals (mg/kg)									
Arsenic	4.9		7.9	J	721		7.2		15.9
Cadmium	[0.57]		ND		5.0		[0.79]		ND
Chromium	15.9	J	11.0	J	70.8		21.1		17.0
Lead	50.6		47.9		336		47.5		59.6
Zinc	110		74.1		553		86.4		105
Total Petroleum Hydrocarbons (mg/kg)	540		670		1900		230		68

Notes:

ND: Not Detected

NT: Not Tested

[]: Concentration Detected Between IDL and CRQL

UJ: Compound Not Detected, Quantitation Limit Estimated

U: Compound Not Detected, Concentration Listed is The Required For Quantitation

J: Estimated Concentration

Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 2 - Continued

Soil Boring and Test Pit Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	TB-II-3-2		TB-II-3-2RE		TB-11-3-6		TB-II-3-8		TB-II-4-2	
Enseco Laboratory Sample No.:	020528-0003 020527-0007		020528-0003RE		020528-0004 020527-0008		020528-0005 020527-0009		020527-0001 020527-0005	
Sampling Date:	3/10/92		3/10/92		3/10/92		3/10/92		3/10/92	
Comments:			Re-extraction							
Volatile Organic Compounds (ug/kg)										
methylene chloride	3	J	R		2	J	ND		2	J
acetone	ND		R		130		23	U	120	
carbon disulfide	ND		R		ND		ND		ND	
2-butanone	ND		R		15		ND		ND	
1,1,1-trichloroethane	ND		R		ND		ND		ND	
benzene	ND		R		ND		ND		ND	
2-hexanone	ND	UJ	R		ND		ND		ND	
tetrachloroethane	18	J	R		2	J	ND		ND	
toluene	1	J	R		2	J	ND		2	J
ethylbenzene	ND	UJ	R		ND		ND		ND	
xylene (total)	ND	UJ	R		ND		ND		4	J
Semi-Volatile Organics Compounds (ug/kg)										
4-methylphenol	ND	UJ	NT		ND	UJ	ND	UJ	ND	UJ
2,4-dimethylphenol	ND	UJ	NT		ND	UJ	ND	UJ	82	J
naphthalene	ND	UJ	NT		ND	UJ	ND	UJ	490	J
2-methylnaphthalene	ND	UJ	NT		ND	UJ	ND	UJ	300	J
acenaphthylene	ND	UJ	NT		ND	UJ	ND	UJ	140	J
acenaphthene	410	J	NT		ND	UJ	ND	UJ	340	J
dibenzofuran	300	J	NT		ND	UJ	ND	UJ	330	J
fluorene	510	J	NT		ND	UJ	ND	UJ	430	J
phenanthrene	4500	J	NT		660	J	ND	UJ	2500	J
anthracene	1700	J	NT		ND	UJ	ND	UJ	870	J
carbazole	390	J	NT		ND	UJ	ND	UJ	340	J
fluoranthene	7600	J	NT		1000	J	ND	UJ	2900	J
pyrene	5800	J	NT		870	J	ND	UJ	2700	J
butylbenzylphthalate	ND	UJ	NT		ND	UJ	ND	UJ	ND	UJ
benzo(a)anthracene	3300	J	NT		420	J	ND	UJ	1500	J
chrysene	2900	J	NT		440	J	ND	UJ	1300	J
bis(2-ethylhexyl)phthalate	ND	UJ	NT		ND	UJ	ND	UJ	ND	UJ
di-n-octylphthalate	ND	UJ	NT		ND	UJ	ND	UJ	ND	UJ
benzo(b)fluoranthene	5000	J	NT		720	J	ND	UJ	2300	J
benzo(k)fluoranthene	ND	UJ	NT		ND	UJ	ND	UJ	ND	UJ
benzo(a)pyrene	3700	J	NT		460	J	ND	UJ	1600	J
indeno(1,2,3-cd)pyrene	1800	J	NT		230	J	ND	UJ	810	J

dibenz(a,h)anthracene	ND	UJ	NT	ND	UJ	ND	UJ	ND	UJ
benzo(g,h,i)-perylene	1400	J	NT	ND	UJ	ND	UJ	560	J
Total Polyaromatic Hydrocarbons [PAHs](ug/kg)	39010		NT	4800		0	UJ	19080	
Metals (mg/kg)									
Arsenic	3.5	J	NT	9.7	J	4.4	J	3.5	J
Cadmium	3.3	J	NT	[1.1]	J	1.3	J	1.2	J
Chromium		R	NT		R		R		R
Lead	210	J	NT	97.3	J	5.8		95	J
Zinc	217	J	NT	63.1	J	45.7	J	91.4	J
Total Petroleum Hydrocarbons(mg/kg)	27000		NT	2100		ND		4100	

Notes:
- ND: Not Detected
- NT: Not Tested
- []: Concentration Detected Between IDL and CRQL
- U: Compound Not Detected, Concentration Required for Quantitation
- UJ: Compound Not Detected, Quantitation Limit Estimated
- J: Estimated Concentration
- R: Data Point Rejected By Quality Assurance Department

Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 2 - CONTINUED

Soil Boring and Test Pit Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	TB-II-4-4		TB-II-5-2		TB-II-5-2RE		TB-II-6-2		TB-II-6-4	
Enseco Laboratory Sample No.:	020528-0002 020527-0006		020528-0006 020527-0010		020528-0006RE		020507-0004 020505-0005		020507-0001	
Sampling Date:	3/10/92		3/10/92		3/10/92		3/9/92		3/9/92	
Comments:					Re-extraction					
Volatile Organic Compounds (ug/kg)										
methylene chloride	2	J	2	J		R	ND		NT	
acetone	11	U	42	U		R	47		NT	
carbon disulfide	ND		3	J		R	ND		NT	
2-butanone	ND		8	J		R	ND		NT	
1,1,1-trichloroethane	ND		ND			R	ND		NT	
benzene	1	J	ND			R	ND		NT	
2-hexanone	ND		ND	UJ		R	ND		NT	
tetrachloroethane	ND		ND	UJ		R	ND		NT	
toluene	2	J	3	J		R	ND		NT	
ethylbenzene	ND		2	J		R	ND		NT	
xylene (total)	ND		8	J		R	ND		NT	
Semi-Volatile Organics Compounds (ug/kg)										
4-methylphenol	ND	UJ	ND	UJ	NT		ND		NT	
2,4-dimethylphenol	ND	UJ	ND	UJ	NT		ND		NT	
naphthalene	230	J	900	J	NT		3000	J	NT	
2-methylnaphthalene	ND	UJ	ND	UJ	NT		ND		NT	
acenaphthylene	640	J	2300	J	NT		ND		NT	
acenaphthene	460	J	1300	J	NT		4900	J	NT	
dibenzofuran	350	J	870	J	NT		5900	J	NT	
fluorene	860	J	1700	J	NT		8400	J	NT	
phenanthrene	4400	J	15000	J	NT		34000		NT	
anthracene	1900	J	5100	J	NT		11000	J	NT	
carbazole	630	J	1100	J	NT		5500	J	NT	
fluoranthene	6900	J	25000	J	NT		29000		NT	
pyrene	6200	J	21000	J	NT		22000		NT	
butylbenzylphthalate	ND	UJ	ND	UJ	NT		ND		NT	
benzo(a)anthracene	3900	J	12000	J	NT		11000	J	NT	
chrysene	3400	J	11000	J	NT		11000	J	NT	
bis(2-ethylhexyl)phthalate	ND	UJ	7600	UJ	NT		ND		NT	
di-n-octylphthalate	ND	UJ	ND	UJ	NT		ND		NT	
benzo(b)fluoranthene	5500	J	17000	J	NT		15000	J	NT	
benzo(k)fluoranthene	1400	J	ND	UJ	NT		4300	J	NT	
benzo(a)pyrene	3900	J	14000	J	NT		11000	J	NT	
indeno(1,2,3-cd)pyrene	1600	J	6500	J	NT		5100	J	NT	
dibenz(a,h)anthracene	ND	UJ	ND	UJ	NT		ND		NT	

benzo(g,h,i)-perylene	1000	J	4600	J	NT	4400	J	NT
Total Polyaromatic Hydrocarbons [PAHs](ug/kg)	43020		138500		NT	179600		NT
Metals (mg/kg)								
Arsenic	3.8	J	3.7	J	NT	10.0	J	NT
Cadmium	[1.1]	J	3.3	J	NT	2.6	J	NT
Chromium		R		R	NT	102	R	NT
Lead	103	J	165	J	NT	127	J	NT
Zinc	70.4	J	230	J	NT		J	NT
Total Petroleum Hydrocarbons (mg/kg)	9400		8000		NT	3400	J	810

Notes:

ND: Not Detected
NT: Not Tested
[]: Concentration Detected Between IDL and CRQL
U: Compound Not Detected, Concentration Required for Quantitation
UJ: Compound Not Detected, Quantitation Limited Estimated
J: Estimated Concentration
R: Data Point Rejected By Quality Assurance Department

Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 2 - CONTINUED

Soil Boring and Test Pit Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	TB-II-6-8		TB-II-6-10.5		TB-II-7-2		TB-II-7-8		TB-II-7-8A	
Enseco Laboratory Sample No.:	020507-0005		020507-0006		020507-0001		020507-0002		020507-0003	
	020505-0006		020505-0007		020505-0002		020505-0003		020505-0004	
Sampling Date:	3/9/92		3/9/92		3/9/92		3/9/92		3/9/92	
Comments:									Field Duplicate	
Volatile Organic Compounds (ug/kg)										
methylene chloride	NT		NT		ND		NT		NT	
acetone	NT		NT		ND		NT		NT	
carbon disulfide	NT		NT		ND		NT		NT	
2-butanone	NT		NT		ND		NT		NT	
1,1,1-trichloroethane	NT		NT		8	J	NT		NT	
benzene	NT		NT		ND		NT		NT	
2-hexanone	NT		NT		ND	UJ	NT		NT	
tetrachloroethane	NT		NT		3	J	NT		NT	
toluene	NT		NT		1	J	NT		NT	
ethylbenzene	NT		NT		ND	UJ	NT		NT	
xylene (total)	NT		NT		2	J	NT		NT	
Semi-Volatile Organics Compounds (ug/kg)										
4-methylphenol	ND		ND		ND		ND		ND	
2,4-dimethylphenol	ND		ND		ND		ND		ND	
naphthalene	140	J	150	J	86	J	ND		ND	
2-methylnaphthalene	230	J	130	J	ND		ND		ND	
acenaphthylene	390	J	230	J	240	J	ND		ND	
acenphthene	200	J	150	J	ND		ND		ND	
dibenzofuran	110	J	ND		ND		ND		ND	
fluorene	320	J	240	J	83	J	ND		ND	
phenanthrene	2500		1400		630	J	ND		48	J
anthracene	750	J	410	J	480	J	ND		ND	
carbazole	330	J	140	J	99	J	ND		ND	
fluoranthene	3900		2300		1800		63	J	94	J
pyrene	4700		2500		2000	J	64	J	89	J
butylbenzylphthalate	ND		ND		ND		ND		ND	
benzo(a)anthracene	2000		1000	J	1000		ND		45	J
chrysene	2500		1300		1200		ND		56	J
bis(2-ethylhexyl)phthalate	860	J	830	J	750	U	400	J	290	J
di-n-octylphthalate	17	J	ND		ND		ND		ND	
benzo(b)fluoranthene	3500		1600		1900		55	J	82	J
benzo(k)fluoranthene	1100	J	580	J	630	J	ND	UJ	ND	UJ
benzo(a)pyrene	2200		1200		1300		ND		54	J
indeno(1,2,3-cd)pyrene	1100		670	J	550	J	ND		ND	
dibenz(a,h)anthracene	380	J	230	J	200	J	ND		ND	
benzo(g,h,i)-perylene	970	J	600	J	470	J	ND		ND	

Total Polyaromatic Hydrocarbons [PAHs](ug/kg)	27210		14830		12668		182		468	
Metals (mg/kg)										
Arsenic	400	J	95.8	J	3.6	J	[2.0]	J	[2.1]	J
Cadmium	4.3	J	3.1	J	1.3	J	1.4	J	1.2	J
Chromium		R		R		R		R		R
Lead	352	J	271	J	50.0		18.2		13.4	
Zinc	219	J	249	J	63.5	J	49.2	J	39.4	J
Total Petroleum Hydrocarbons (mg/kg)	140		150		1500		140		180	

Notes:

ND: Not Detected
NT: Not Tested
[]: Concentration Detected Between IDL and CRQL
U: Compound Not Detected, Concentration Required for Quantitation
UJ: Compound Not Detected, Quantitation Limit Estimated
J: Estimated Concentration
R: Data Point Rejected By Quality Assurance Department

Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 2 - CONTINUED

Soil Boring and Test Pit Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	TB-II-8-2		TB-II-8-6		TB-II-8-10		TB-II-9-2		TB-II-9-2-RE	
Enseco Laboratory Sample No.:	020528-0007 020527-0011		020528-0008 020527-0012		020528-0009 020527-0013		020563-0006		020563-0006RE	
Sampling Date:	3/10/92		3/10/92		3/10/92		3/11/92		3/11/92	
Comments:									Re-extraction	
Volatile Organic Compounds (ug/kg)										
methylene chloride	3	J	2	J	3	J	11	U		R
acetone	53	U	48	U	160	B	110			R
carbon disulfide	ND		ND		ND		1	J		R
2-butanone	5	J	10	J	49		17			R
1,1,1-trichloroethane	ND		ND		ND		ND	UJ		R
benzene	ND		ND		ND		2	J		R
2-hexanone	ND		ND		2	J	ND	UJ		R
tetrachloroethane	ND		ND		ND		ND	UJ		R
toluene	2	J	ND		ND		11	UJ		R
ethylbenzene	ND		ND		ND		2	J		R
xylene (total)	ND		ND		ND		11	J		
Semi-Volatile Organics Compounds (ug/kg)										
4-methylphenol	ND	UJ	ND	UJ	ND	UJ	ND		NT	
2,4-dimethylphenol	ND	UJ	ND	UJ	ND	UJ	ND		NT	
naphthalene	ND	UJ	130	J	ND	UJ	ND		NT	
2-methylnaphthalene	ND	UJ	180	J	ND	UJ	ND		NT	
acenaphthylene	ND	UJ	120	J	290	J	ND		NT	
acenaphthene	ND	UJ	170	J	ND	UJ	ND		NT	
dibenzofuran	ND	UJ	110	J	ND	UJ	ND		NT	
fluorene	540	J	240	J	ND	UJ	ND		NT	
phenanthrene	2300	J	1000	J	2100	J	3100	J	NT	
anthracene	900	J	310	J	670	J	ND		NT	
carbazole	ND	UJ	83	J	ND	UJ	ND		NT	
fluoranthene	3700	J	1200	J	3800	J	3200	J	NT	
pyrene	3000	J	1100	J	3400	J	4100	J	NT	
butylbenzylphthalate	ND	UJ	ND	UJ	ND	UJ	ND		NT	
benzo(a)anthracene	ND	UJ	570	J	1700	J	1600	J	NT	
chrysene	1700	J	610	J	2000	J	1900	J	NT	
bis(2-ethylhexyl)phthalate	ND	UJ	790	UJ	2400	UJ	ND		NT	
di-n-octylphthalate	ND	UJ	ND	UJ	ND	UJ	ND		NT	
benzo(b)fluoranthene	2200	J	890	J	2600	J	ND		NT	
benzo(k)fluoranthene	ND	UJ	ND	UJ	ND	UJ	ND	UJ	NT	
benzo(a)pyrene	1600	J	610	J	1600	J	1600	J	NT	
indeno(1,2,3-cd)pyrene	670	J	260	J	720	J	ND		NT	
dibenz(a,h)anthracene	ND	UJ	ND	UJ	ND	UJ	ND		NT	
benzo(g,h,i)-perylene	420	J	140	J	450	J	ND		NT	

Total Polyaromatic Hydrocarbons [PAHs](ug/kg)	17030		7613		19330		15500	NT
Metals (mg/kg)								
Arsenic	7.0	J	12.0	J	168	J	4.3	NT
Cadmium	[1.1]	J	1.5	J	2.1	J	ND	NT
Chromium		R		R		R	16.4	NT
Lead	56.8		1010	J	191	J	49.8	NT
Zinc	46.3	J	1720	J	162	J	60.8	NT
Total Petroleum Hydrocarbons [PAHs] (mg/kg)	1800		330		1000		4200	NT

Notes:

ND: Not Detected
NT: Not Tested
[]: Concentration Detected Between IDL and CRQL
B: Compound Detected in Associated Blank
U: Compound Not Detected, Concentration Required for Quantitation
UJ: Compound Not Detected, Quantitation Limit Estimated
J: Estimated Concentration
R: Data Point Rejected By Quality Assurance Department
Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 2 - CONTINUED

Soil Boring and Test Pit Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	TB-II-9-6		TP-11-1-2		FIELD BLANK		TRIP BLANK		FIELD BLANK	
Enseco Laboratory Sample No.:	020563-0007		020674-0001		020607-0007 020505-0008		020607-0006		020528-0010 020527-0014	
Sampling Date:	3/11/92		3/18/92		3/9/92		3/9/92		3/10/92	
Comments:					ug/l		ug/l		ug/l	
Volatile Organic Compounds (ug/kg)										
methylene chloride	NT		12	U	ND		ND		ND	
acetone	NT		39		ND		ND		ND	UJ
carbon disulfide	NT		ND		ND		ND		ND	
2-butanone	NT		ND		ND		ND		ND	
1,1,1-trichloroethane	NT		ND		ND		ND		ND	
benzene	NT		1	JN	ND		ND		ND	
2-hexanone	NT		ND		ND		ND		ND	UJ
tetrachloroethane	NT		ND		ND		ND		ND	
toluene	NT		2	J	ND		ND		ND	
ethylbenzene	NT		2	J	ND		ND		ND	
xylene (total)	NT		12		ND		ND		ND	
Semi-Volatile Organics Compounds (ug/kg)										
4-methylphenol	ND		ND		ND	UJ	NT		ND	UJ
2,4-dimethylphenol	ND		2500		ND	UJ	NT		ND	UJ
naphthalene	ND		370	J	ND	UJ	NT		ND	UJ
2-methylnaphthalene	1400	J	340	J	ND	UJ	NT		ND	UJ
acenaphthylene	960	J	1000	J	ND		NT		ND	UJ
acenaphthene	3900	J	860	J	ND		NT		ND	UJ
dibenzofuran	2300	J	640	J	ND		NT		ND	UJ
fluorene	4100	J	1500	J	ND		NT		ND	UJ
phenanthrene	12000		8800		ND		NT		ND	UJ
anthracene	9900		2900		ND		NT		ND	UJ
carbazole	990	J	1000	J	ND		NT		ND	UJ
fluoranthene	20000		11000		ND		NT		ND	UJ
pyrene	16000		10000		ND		NT		ND	UJ
butylbenzylphthalate	ND		ND		ND		NT		ND	UJ
benzo(a)anthracene	7000	J	5600		ND		NT		ND	UJ
chrysene	7600	J	4700		ND		NT		ND	UJ
bis(2-ethylhexyl)phthalate	ND		ND		ND		NT		ND	UJ
di-n-octylphthalate	ND		ND		ND		NT		ND	UJ
benzo(b)fluoranthene	8400		6500		ND		NT		ND	UJ
benzo(k)fluoranthene	3400	J	2200		ND		NT		ND	UJ
benzo(a)pyrene	6600	J	5000		ND		NT		ND	UJ
indeno(1,2,3-cd)pyrene	3500	J	1900		ND		NT		ND	UJ
dibenz(a,h)anthracene	ND		290	J	ND		NT		ND	UJ
benzo(g,h,i)-perylene	2300	J	960	J	ND		NT		ND	UJ

Total Polyaromatic Hydrocarbons [PAHs](ug/kg)	90070	64920		0		NT	0	
Metals (mg/kg)								
Arsenic	5.8	3.3	J	ND		NT	ND	
Cadmium	ND	ND	UJ	ND	UJ	NT	ND	UJ
Chromium	12.8	18.8	J	ND		NT	[4.9]	
Lead	34.7	36.4	J	ND		NT	ND	
Zinc	48.4	118	J	[6.1]		NT	[3.2]	
Total Petroleum Hydrocarbons (mg,kg)	6100	2700		ND		NT	ND	

Notes:

ND: Not Detected
NT: Not Tested
[]: Concentration Detected Between IDL and CRQL
U: Compound Not Detected, Concentration Required for Quantitation
UJ: Compound Not Detected, Quantitation Limit Estimated
J: Estimated Concentration
JN: Compound Not Detected, Quantitation Limit Estimated Concentration

Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 2 - CONTINUED

Soil Boring and Test Pit Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	TRIP BLANK		TRIP BLANK		FIELD BLANK		FIELD BLANK		TRIP BLANK	
Enseco Laboratory Sample No.:	020528-0011		020563-0008		020563-0009		020674-0002		020674-0003	
Sampling Date:	3/10/92		3/11/92		3/11/92		3/18/92		3/17/92	
Comments :										
Volatile Organic Compounds (ug/l)										
methylene chloride		R		R	ND		2	JB	2	R
acetone		R		R	ND	UJ	ND			JB
carbon disulfide		R		R	ND		ND			R
2-butanone		R		R	ND		ND	UJ		R
1,1,1-trichloroethane		R		R	ND		ND			R
benzene		R		R	ND		ND			R
2-hexanone		R		R	ND	UJ	ND			R
tetrachloroethane		R		R	ND		ND			R
toluene		R		R	ND		ND			R
ethylbenzene		R		R	ND		ND			R
xylene (total)		R		R	ND		ND			R
Semi-Volatile Organics Compounds (ug/l)										
4-methylphenol	NT		NT		ND		ND		NT	
2,4-dimethylphenol	NT		NT		ND		ND		NT	
naphthalene	NT		NT		ND		ND		NT	
2-methylnaphthalene	NT		NT		ND	UJ	ND		NT	
acenaphthylene	NT		NT		ND		ND		NT	
acenaphthene	NT		NT		ND		ND		NT	
dibenzofuran	NT		NT		ND		ND		NT	
fluorene	NT		NT		ND		ND		NT	
phenanthrene	NT		NT		ND		ND		NT	
anthracene	NT		NT		ND		ND		NT	
carbazole	NT		NT		ND		ND		NT	
fluoranthene	NT		NT		ND		ND		NT	
pyrene	NT		NT		ND		ND		NT	
butylbenzylphthalate	NT		NT		ND		ND		NT	
benzo(a)anthracene	NT		NT		ND		ND		NT	
chrysene	NT		NT		ND		ND		NT	
bis(2-ethylhexyl)phthalate	NT		NT		520		ND	UJ	NT	
di-n-octylphthalate	NT		NT		ND	UJ	ND	UJ	NT	
benzo(b)fluoranthene	NT		NT		ND		ND		NT	
benzo(k)fluoranthene	NT		NT		ND		ND		NT	
benzo(a)pyrene	NT		NT		ND		ND		NT	
indeno(1,2,3-cd)pyrene	NT		NT		ND		ND		NT	
dibenz(a,h)anthracene	NT		NT		ND		ND		NT	
benzo(g,h,i)-perylene	NT		NT		ND		ND		NT	

Total Polyaromatic Hydrocarbons [PAHs](ug/kg)	NT	NT	0	0	NT
Metals (mg/l)					
Arsenic	NT	NT	ND	ND	NT
Cadmium	NT	NT	ND	ND	NT
Chromium	NT	NT	ND	ND	NT
Lead	NT	NT	ND	ND	NT
Zinc	NT	NT	[10.7]	[10.7]	NT
Total Petroleum Hydrocarbons (mg/l)	NT	NT	ND	ND	NT

Notes:

- ND: Not Detected
- NT: Not Tested
- []: Concentration Detected Between IDL and CRQL
- UJ: Compound Not Detected, Quantitation Limit Estimated
- J: Estimated Concentration
- JB: Compound Detected in Associated Blank, Concentration Estimated
- R: Data Point Rejected By Quality Assurance Department

Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 3

Mill Brook Surface Water Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	SS-1-SW		SS-1-SW-AD	SS-2-SW		SS-2-SW-AD
Enseco Laboratory Sample No:	020576-0002		020576-0002	020576-0004		020576-0004
Sampling Data:	3/12/92		3/12/92	3/12/92		3/12/92
Comments:	Unfiltered		Filtered	Unfiltered		Filtered
Volatile Organaic Compounds (ug/l)						
methylene chloride	ND		NT	ND		NT
acetone	ND	UJ	NT	ND	UJ	NT
tetrachloroethene	ND		NT	ND		NT
Semi-Volatile Organics Compounds (ug/l)						
acenaphthene	ND		NT	ND		NT
dibenzofuran	ND		NT	ND		NT
fluorene	ND		NT	ND		NT
phenanthrene	ND		NT	ND		NT
anthracene	ND		NT	ND		NT
carbazole	ND		NT	ND		NT
fluoranthene	ND		NT	ND		NT
pyrene	ND		NT	ND		NT
butylbenzyl phthalate	ND		NT	ND		NT
benzo(a)anthracene	ND		NT	ND		NT
chrysene	ND		NT	ND		NT
bis(2-ethylhexyl)phthalate	52		NT	10	U	NT
benzo(b)fluoranthene	ND		NT	ND		NT
benzo(k)fluoranthene	ND		NT	ND	UJ	NT
benzo(a)pyrene	ND		NT	ND		NT
indeno(1,2,3-cd)pyrene	ND		NT	ND		NT
dibenz(a,h)anthracene	ND		NT	ND		NT
benzo(g,h,i)-perylene	ND		NT	ND		NT
Total Polyaromatic Hydrocarbons [PAHs] (ug/l)	0		NT	0		NT
Pesticides/Herbicides/PCBs (ug/l)						
alpha-BHC	0.053		NT	0.048	J	NT
beta-BHC	ND		NT	ND		NT
delta-BHC	0.034	J	NT	0.032	JN	NT
lindane	0.014	J	NT		R	NT
heptachlor	ND		NT	ND		NT
dieldrin	ND		NT	ND		NT
4,4'-DDE	ND		NT	ND		NT
4,4'-DDD	ND		NT	ND		NT
4,4'-DDT	ND		NT	ND		NT
endrin ketone	ND		NT	ND		NT

alpha chlordane	ND	NT	ND	NT	
gamma chlordane	ND	NT	ND	NT	
Metals (ug/l)					
Arsenic	[2.1]	[3.1]	[2.7]	[3.0]	
Chromium	18.6	17.7	24.5	20.9	
Copper	ND	ND	[3.5]	[9.6]	J
Lead	ND	ND	ND	ND	
Zinc	69.9	62.4	66.2	62.3	

Notes:

ND: Not Detected
NT: Not Tested
[]: Analyte Concentration Detected Between IDL and CRQL
R: Analytical Result Rejected by Quality Assurance Department
Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

U: Analyte Not Detected. Concentration listed is concentration required for quantitation.
J: Estimated Concentration
UJ: Compound Not Detected, Quantitation Limit Estimated
JN: Compound Presumptively Present, Estimated Concentration

NOTE: These tables have been revised in accordance with QA/QC review results, 7/30/92.

TABLE 3 - CONTINUED

Mill Brook Surface Water Analytical Results

Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	SS-2A-SW*		SS-2A-SW-AD*		SS-3-SW		SS-3-SW-AD	
Enseco Laboratory Sample No:	020576-0005		020576-0005		020576-0006		020576-0006	
Sampling Data:	3/12/92		3/12/92		3/12/92		3/12/92	
Comments:	Unfiltered		Filtered		Unfiltered		Filtered	
Volatile Organaic Compounds (ug/l)								
methylene chloride	ND		NT		ND		NT	
acetone	ND	UJ	NT		ND	UJ	NT	
tetrachloroethene	ND		NT		1	J	NT	
Semi-Volatile Organics Compounds (ug/l)								
acenaphthene	ND		NT		ND		NT	
dibenzofuran	ND		NT		ND		NT	
fluorene	ND		NT		ND		NT	
phenanthrene	ND		NT		ND		NT	
anthracene	ND		NT		ND		NT	
carbazole	ND		NT		ND		NT	
fluoranthene	ND		NT		ND		NT	
pyrene	ND		NT		ND		NT	
butylbenzylphthalate	ND		NT		ND		NT	
benzo(a)anthracene	ND		NT		ND		NT	
chrysene	ND		NT		ND		NT	
bis(2-ethylhexyl)phthalate	10	U	NT		10	U	NT	
benzo(b)fluoranthene	ND		NT		ND		NT	
benzo(k)fluoranthene	ND	UJ	NT		ND	UJ	NT	
benzo(a)pyrene	ND		NT		ND		NT	
indeno(1,2,3-cd)pyrene	ND		NT		ND		NT	
dibenz(a,h)anthracene	ND		NT		ND		NT	
benzo(g,h,i)-perylene	ND		NT		ND		NT	
Total Polyaromatic Hydrocarbons [PAHs] (ug/l)	0		NT		0		NT	
Pesticides/Herbicides/PCBs (ug/l)								
alpha-BHC	0.056		NT		0.051		NT	
beta-BHC	ND		NT		ND		NT	
delta-BHC	0.056		NT		0.03	JN	NT	
lindane	0.013	JN	NT		0.011	JN	NT	
heptachlor	ND		NT		ND		NT	
dieldrin	ND		NT		ND		NT	
4,4'-DDE	ND		NT		ND		NT	
4,4'-DDD	ND		NT		ND		NT	
4,4'-DDT	ND		NT		ND		NT	

endrin ketone	ND		NT		ND		NT	
alpha chlordane	ND		NT		ND		NT	
gamma chlordane	ND		NT		ND		NT	
Metals (ug/l)								
Arsenic	[2.7]		[3.2]		[2.9]		[2.6]	
Chromium	23.9		20.6		26.4		23.7	
Copper		R		R		R		R
Lead	ND		ND		ND		ND	
Zinc	69.1		71.8		72.2		77.0	

Notes:

ND: Not Detected
NT: Not Tested
[]: Analyte Concentration Detected Between IDL and CRQL
U: Analyte Not Detected. Concentration listed is concentration required for quantitation.
J: Estimated Concentration
UJ: Compound Not Detected. Quantitation Limit Estimated
JN: Analyte Presumptively Present, Concentration is Estimated
R: Analytical Result Rejected by Quality Assuarance Department
Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 3 - CONTINUED

Mill Brook Surface Water Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	Trip Blank		Field Blank	
Enseco Laboratory Sample No:	020576-0008		020576-0001	
Sampling Data:	3/12/92		3/12/92	
Comments:	Unfiltered		Unfiltered	
Volatile Organaic Compounds (ug/l)				
methylene chloride	ND		ND	
acetone	ND	UJ	ND	UJ
tetrachloroethene	ND		ND	
Semi-Volatile Organics Compounds (ug/l)				
acenaphthene	NT		ND	
dibenzofuran	NT		ND	
fluorene	NT		ND	
phenanthrene	NT		ND	
anthracene	NT		ND	
carbazole	NT		ND	
fluoranthene	NT		ND	
pyrene	NT		ND	
butylbenzylphthalate	NT		ND	
benzo(a)anthracene	NT		ND	
chrysene	NT		ND	
bis(2-ethylhexyl)phthalate	NT		3	J
benzo(b)fluoranthene	NT		ND	
benzo(k)fluoranthene	NT		ND	
benzo(a)pyrene	NT		ND	
indeno(1,2,3-cd)pyrene	NT		ND	
dibenz(a,h)anthracene	NT		ND	
benzo(g,h,i)-perylene	NT		ND	
Total Polyaromatic Hydrocarbons [PAHs] (ug/l)	NT		0	
Pesticides/Herbicides/PCBs (ug/l)				
alpha-BHC	NT		ND	UJ
beta-BHC	NT		ND	UJ
delta-BHC	NT		ND	UJ
lindane	NT		ND	UJ
heptachlor	NT		ND	UJ
dieldrin	NT		ND	UJ
4,4'-DDE	NT		ND	UJ
4,4'-DDD	NT		ND	UJ
4,4'-DDT	NT		ND	UJ
endrin ketone	NT		ND	UJ
alpha chlordane	NT		ND	UJ
gamma chlordane	NT		ND	UJ

Metals (ug/l)

Arsenic	NT	ND
Chromum	NT	ND
Copper	NT	ND
Lead	NT	ND
Zinc	NT	[8.6]

Notes:

ND: Not Detected
NT: Not Tested
[]: Analyte Concentration Detected Between IDL and CRQL
U: Analyte Not Detected. Concentration listed is concentration required for quantitation.
J: Estimated Concentration
UJ: Compound Not Detected, Quantitation Limit Estimated
Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 4

Mill Brook Sediment Water Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

Sample ID:	SS-1-SED		SS-1-SEDDL*		SS-2-SED		SS-3-SED	
Enseco Laboratory Sample No:	020576-0003		020576-0003		020576-0009		020576-0007	
Sampling Data:	3/12/92		3/12/92		3/12/92		3/12/92	
Comments:								
Volatile Organaic Compounds (ug/l)								
methylene chloride	2	J	NT		ND		1	J
acetone	15		NT		ND		ND	
tetrachloroethene	3	J	NT		ND		ND	
Semi-Volatile Organics Compounds (ug/kg)								
acenaphthene	ND		NT		100	J	ND	
dibenzofuran	ND		NT		69	J	ND	
fluorene	48	J	NT		180	J	ND	
phenanthrene	460		NT		1600		81	J
anthracene	96	J	NT		440		ND	
carbazole	48	J	NT		250	J	ND	
fluoranthene	660		NT		1700		140	J
pyrene	720		NT		1500		160	J
butylbenzylphthalate	ND		NT		ND		70	J
benzo(a)anthracene	310	J	NT		760		ND	
chrysene	340	J	NT		720		78	J
bis(2-ethylhexyl)phthalate	430	U	NT		470	U	440	U
benzo(b)fluoranthene	540		NT		920		120	J
benzo(k)fluoranthene	190	J	NT		370	J	42	J
benzo(a)pyrene	320	J	NT		630		70	J
indeno(1,2,3-cd)pyrene	150	J	NT		290	J	40	J
dibenz(a,h)anthracene	ND		NT		83	J	ND	
benzo(g,h,i)-perylene	73	J	NT		150	J	ND	
Total Polyaromatic Hydrocarbons [PAHs] (ug/kg)	3955		NT		9693		731	
Pesticides/Herbicides/PCBs (ug/l)								
alpha-BHC	ND			R	ND		ND	
beta-BHC		R	ND		ND		ND	
delta-BHC		R		R	1.4	JN	1.9	JN
lindane	ND			R	ND		ND	
heptachlor		R		R	0.78	J	ND	
dieldrin	14			R	6.1		5.4	
4,4'-DDE	17			R	6	J	5.8	JN
4,4'-DDD		R	68	J	24		26	
4,4'-DDT		R	96		36		28	
endrin ketone	4.8	JN		R		R		R

alpha chlordane		R	17	7.9	6.6
gamma chlordane		R	18	8.2	6.2
Metals (ug/kg)					
Arsenic	12.6		NT	4.9	3.4
Chromium	30.4		NT	21.7	24.9
Copper	37.6		NT	30.8	34.2
Lead	100		NT	39.7	75.6
Zinc	110		NT	107	100

Notes:

*: Sample Dilution
ND: Not Detected
NT: Not Tested
[]: Analyte Concentration Detected Between IDL and CRQL
U: Analyte Not Detected. Concentration listed is concentration required for quantitation.
J: Estimated Concentration
UJ: Compound Not Detected, Quantitation Limit Estimated
JN: Analyte Presumptively Present, Concentration Estimated
R: Analytical Result Projected by Quality Assurance Department

Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 4 - CONTINUED
Mill Brook Sediment Water Analytical Results
Renora Focused Remedial Investigation, Edison, New Jersey

	Sample ID:	Trip Blank		Field Blank	
	Enseco Laboratory Sample No:	020576-0008		020576-0001	
	Sampling Data:	3/12/92		3/12/92	
	Comments:	Unfiltered		Unfiltered	
Volatile Organaic Compounds (ug/kg)					
	methylene chloride	ND		ND	
	acetone	ND	UJ	ND	UJ
	tetrachloroethene	ND		ND	
Semi-Volatile Organics Compounds (ug/kg)					
	acenaphthene	NT		ND	
	dibenzofuran	NT		ND	
	fluorene	NT		ND	
	phenanthrene	NT		ND	
	anthracene	NT		ND	
	carbazole	NT		ND	
	fluoranthene	NT		ND	
	pyrene	NT		ND	
	butylbenzylphthalate		NT		ND
	benzo(a)anthracene	NT		ND	
	chrysene	NT		ND	
	bis(2-ethylhexyl)phthalate	NT		3	J
	benzo(b)fluoranthene	NT		ND	
	benzo(k)fluoranthene	NT		ND	
	benzo(a)pyrene	NT		ND	
	indeno(1,2,3-cd)pyrene	NT		ND	
	dibenz(a,h)anthracene	NT		ND	
	benzo(g,h,i)-perylene	NT		ND	
Total Polyaromatic Hydrocarbons [PAHs]		NT		0	
Pesticides/Herbicides/PCBs (ug/l)					
	alpha-BHC	NT		ND	UJ
	beta-BHC	NT		ND	UJ
	delta-BHC	NT		ND	UJ
	lindane	NT		ND	UJ
	heptachlor	NT		ND	UJ
	dieldrin	NT		ND	UJ
	4,4'-DDE	NT		ND	UJ
	4,4'-DDD	NT		ND	UJ
	4,4'-DDT	NT		ND	UJ
	endrin ketone	NT		ND	UJ
	alpha chlordane	NT		ND	UJ

gamma chlordane	NT	ND	UJ

Metals (ug/l)

Arsenic	NT	ND
Chromium	NT	ND
Copper	NT	ND
Lead	NT	ND
Zinc	NT	[8.6]

Notes:

ND: Not Detected
NT: Not Tested
[]: Analyte Concentration Detected Between IDL and CRQL
U: Analyte Not Detected. Concentration listed is concentration required for quantitation.
J: Estimated Concentration
UJ: Compound Not Detected, Quantitation Limit Estimated

Source: BCM Engineers Inc. (BCM Project No. 00-4376-09)

TABLE 5 RENORA SITE: CONTAMINANTS OF CONCERN

Contaminant of Concern	Ground Water	Surface Soils	Subsurface Soils	Sediments	Surface Water
Volatiles					
Acetone		X	X	X	
Benzene	X	X	X		
2-Butanone (MEK)	X	X	X		
Chloroethane (ethyl chloride)	X				
Ethylbenzene		X			
2-Hexanone (MBK)			X		
Methylene chloride		X	X	X	
Tetrachloroethylene		X	X	X	
Toluene		X	X		
1,1,1-Trichloroethane		X			
Xylenes		X			
BNAs					
Acenaphthene	X	X	X	X	
Acenaphthylene		X	X		
Anthracene		X	X	X	
Benzo(a)anthracene		X	X	X	
Benzo(a)pyrene		X	X	X	
Benzo(b)fluoranthene		X	X	X	
Benzo(g,h,i)perylene		X	X	X	
Benzo(k)fluoranthene		X	X	X	
Benzylbutylphthalate		X	X		
Bis(2-ethylhexyl)phthalate			X		
Chrysene		X	X	X	
Dibenzofuran		X	X	X	
Dibenz(a,h)anthracene		X	X	X	
2,4-Dimethylphenol		X	X		
Di-n-octyl phthalate			X		
Fluoranthene	X	X	X	X	

TABLE 5 - CONTINUED

Contaminant of Concern	Surface Water	Surface Soils	Subsurface Soils	Sediments	Surface Water
Fluorene	X	X	X	X	
Indeno(1,2,3-cd)pyrene		X	X	X	
2-Methylnaphthalene		X	X		
4-Methylphenol (p-cresol)	X		X		
Naphthalene		X	X		
Phenanthrene		X	X	X	
Pyrene	X	X	X	X	
Pesticides					
alpha-BHC					X
beta-BHC					X
delta-BHC					X
gamma-BHC (Lindane)					X
alpha Chlordane				X	
gamma-Chlordane				X	
4,4'-DDD				X	
4,4'-DDE				X	
4,4'-DDT				X	
Dieldrin				X	
Endrin ketone				X	
Heptachlor				X	
Ingorganics					
Arsenic	X	X	X	X	X
Cadmium	X	X	X		
Chromium	X	X	X	X	X
Copper				X	X
Lead	X	X	X	X	
Zinc	X	X	X	X	X

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Ground Water

Class	NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
VOCs	2-butanone	1	3	2.00	2.00	RW-3	3.68	55.47	10.00	10.00
	benzene	1	3	2.00	2.00	RW-3	3.68	55.47	10.00	10.00
	chloroethane	1	3	29.00	29.00	RW-3	8.98	202046.88	10.00	10.00
BNAs	4-methylphenol	1	3	2.00	2.00	RW-6	3.68	55.47	10.00	10.00
	acenaphthene	1	3	2.00	2.00	RW-3	3.68	55.47	10.00	10.00
	fluoroanthene	1	3	2.00	2.00	RW-2	3.68	55.47	10.00	10.00
	fluorene	1	3	1.00	1.00	RW-3	2.92	12960.77	10.00	10.00
	pyrene	1	3	2.00	2.00	RW-2	2.68	55.47	10.00	10.00
Inor.	Arsenic	1	1	49.10	49.10	RW-2	49.10	49.10	.	.
	Cadmium	1	3	11.00	11.00	RW-3	2.22	284118145.80	2.00	2.00
	Chromium	3	3	14.70	28.40	RW-3	18.51	71.22	.	.
	Chromium (+6)	2	3	0.01	0.03	RW-3	0.01	8.36	0.01	0.01
	Lead	3	3	35.60	130.00	RW-3	58.16	6995.05	.	.
	Zinc	3	3	90.00	831.00	RW-3	236.11	74000000.07	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Filtered Ground Water

Class	NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct Upp.Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
Inor.	Arsenic	1	1	15.50	15.50	RW-2-AD	15.50	15.50	.	.
	Zinc	3	3	18.30	36.30	RW-6-AD	27.56	99.48	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Background Ground Water

Class	NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
VOCs	toluene	1	1	1.00	1.00	RW-7	1.00	1.00	.	.
BNAs	2-methynaphthalene	1	1	6.50	6.50	RW-7	6.50	6.50	.	.
	acenaphthene	1	1	20.00	20.00	RW-7	20.00	20.00	.	.
	anthracene	1	1	3.50	3.50	RW-7	3.50	3.50	.	.
	carbozole	1	1	1.00	1.00	RW-7	1.00	1.00	.	.
	dibenzofuran	1	1	11.00	11.00	RW-7	11.00	11.00	.	.
	fluoranthene	1	1	4.00	4.00	RW-7	4.00	4.00	.	.
	fluorene	1	1	16.00	16.00	RW-7	16.00	16.00	.	.
	naphthalene	1	1	3.50	3.50	RW-7	3.50	3.50	.	.
	phenanthrene	1	1	10.50	10.50	RW-7	10.50	10.50	.	.
	pyrene	1	1	2.00	2.00	RW-7	2.00	2.00	.	.
Inor.	Arsenic	1	1	95.70	95.70	RW-7	95.70	95.70	.	.
	Zinc	1	1	29.30	29.30	RW-7	29.30	29.30	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Background Filtered Ground Water

Class	NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detected Limit
Inor.	Arsenic	1	1	82.50	82.50	RW-7-AD	82.50	82.50	.	.
	Zinc	1	1	14.70	14.70	RW-7-AD	14.70	14.70	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Surface Soils (0-2 feet)

Class	NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detected Limit
VOCs	1,1,1-trichloroethane	1	9	8.00	8.00	TB-II-7-2	5.93	6.47	11.00	12.50
	2-butanone	4	9	5.00	23.00	TB-II-4-2	6.71	11.07	11.00	12.00
	acetone	5	9	11.00	120.00	TB-II-4-2	22.48	117.98	11.00	53.00
	benzene	1	9	1.00	1.00	TP-II-1-2	4.66	9.02	11.00	12.50
	carbon disulfide	1	9	3.00	3.00	TB-II-5-2	5.32	6.33	11.00	12.50
	ethylbenzene	2	9	2.00	2.00	TB-II-5-2	4.50	7.19	11.00	12.50
	methylene chloride	4	9	2.00	3.00	TB-II-3-2	3.93	6.39	11.00	12.50
	tetrachloroethene	2	9	3.00	18.00	TB-II-3-2	6.01	9.64	11.00	12.50
	toluene	6	9	1.00	3.00	TB-II-5-2	2.55	6.25	11.00	12.50
	xylene (total)	6	9	1.00	12.00	TP-II-1-2	4.03	11.88	11.00	12.50
BNAs	2,4-dimethylphenol	2	9	82.00	2500.00	TP-II-1-2	1188.63	21320.02	750.00	18000.00
	2-methylnaphthalene	2	9	300.00	340.00	TP-II-1-2	1099.93	8989.00	750.00	18000.00
	acenaphthene	6	9	280.00	4900.00	TB-II-6-2	804.35	3542.25	750.00	3700.00
	acenaphthylene	6	9	140.00	2300.00	TB-II-5-2	811.46	20865.91	3700.00	18000.00
	anthracene	9	9	240.00	11000.00	TB-II-6-2	1337.75	14479.72	.	.
	benzo(a)anthracene	8	9	640.00	12000.00	TB-II-5-2	2583.87	16022.27	3700.00	3700.00
	benzo(a)pyrene	9	9	820.00	14000.00	TB-II-5-2	2766.27	15113.63	.	.
	benzo(b)fluoranthene	9	9	1100.00	17000.00	TB-II-5-2	3673.51	19255.54	.	.
	benzo(g,h,i)-perylene	9	9	250.00	4600.00	TB-II-5-2	864.83	5456.86	.	.
	benzo(k)fluoranthene	5	9	470.00	4300.00	TB-II-6-2	1187.02	4797.49	720.00	7600.00
	butylbenzylphthalate	1	9	1100.00	1100.00	TB-II-1-2	1235.22	7260.89	720.00	18000.00
	carbazole	6	9	99.00	5500.00	TB-II-6-2	805.70	6336.22	1900.00	3700.00
	chrysene	9	9	680.00	11000.00	TP-II-5-2	2480.42	13249.17	.	.
	dibenz(a,h)anthracene	2	9	200.00	290.00	TP-II-1-2	1028.38	11399.83	720.00	18000.00
	dibenzofuran	6	9	250.00	5900.00	TB-II-6-2	722.41	3999.91	750.00	3700.00
	fluoranthene	9	9	1400.00	29000.00	TB-II-6-2	5464.87	39044.68	.	.
	fluorene	8	9	83.00	8400.00	TB-II-6-2	790.11	9301.14	1900.00	1900.00
	indeno(1,2,3-cd)pyrene	9	9	440.00	6500.00	TB-II-5-2	1247.09	6730.77	.	.
	naphthalene	5	9	86.00	3000.00	TB-II-6-2	750.83	4169.64	1900.00	3700.00
	phenanthrene	9	9	630.00	34000.00	TB-II-6-2	3742.03	52682.56	.	.
	pyrene	9	9	1500.00	22000.00	TB-II-6-2	5009.28	25631.80	.	.
Inor.	Arsenic	9	9	3300.00	10000.00	TB-II-6-2	4935.23	7430.50	.	.
	Cadmium	8	9	570.00	3300.00	TB-II-3-2	1199.53	4342.15	470.00	470.00
	Chromium	3	3	13450.00	21100.00	TB-II-2-2	17473.81	32193.31	.	.
	Lead	9	9	36400.00	210000.00	TB-II-3-2	75655.15	154901.66	.	.
	Zinc	9	9	46300.00	230000.00	TB-II-5-2	105350.02	185293.44	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Background Surface Soils (0-2 feet)

Class	NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
VOCs	2-butanone	1	1	17.00	17.00	TB-II-9-2	17.00	17.00	.	.
	acetone	1	1	110.00	110.00	TB-II-9-2	110.00	110.00	.	.
	benzene	1	1	2.00	2.00	TB-II-9-2	2.00	2.00	.	.
	ethylbenzene	1	1	2.00	2.00	TB-II-9-2	2.00	2.00	.	.
	xylene (total)	1	1	11.00	11.00	TB-II-9-2	11.00	11.00	.	.
BNAs	benzo(a)anthracene	1	1	1600.00	1600.00	TB-II-9-2	1600.00	1600.00	.	.
	benzo(a)pyrene	1	1	1600.00	1600.00	TB-II-9-2	1600.00	1600.00	.	.
	chrysene	1	1	1900.00	1900.00	TB-II-9-2	1900.00	1900.00	.	.
	fluoranthene	1	1	3200.00	3200.00	TB-II-9-2	3200.00	3200.00	.	.
	phenanthrene	1	1	3100.00	3100.00	TB-II-9-2	3100.00	3100.00	.	.
	pyrene	1	1	4100.00	4100.00	TB-II-9-2	4100.00	4100.00	.	.
Inor.	Arsenic	1	1	4300.00	4300.00	TB-II-9-2	4300.00	4300.00	.	.
	Chromium	1	1	16400.00	16400.00	TB-II-9-2	16400.00	16400.00	.	.
	Lead	1	1	49800.00	49800.00	TB-II-9-2	49800.00	49800.00	.	.
	Zinc	1	1	60800.00	60800.00	TB-II-9-2	60800.00	60800.00	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Subsurface Soils (>2 feet)

Detect. Class	NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Limit
VOCs	2-butanone	3	5	10.00	49.00	TB-II-8-10	11.94	126.21	11.00	12.00
	2-hexanone	1	5	2.00	2.00	TB-II-8-10	4.95	12.38	11.00	15.00
	acetone	2	5	130.00	160.00	TB-II-8-10	31.61	17465.22	11.00	48.00
	benzene	1	5	1.00	1.00	TB-II-4-4	4.58	42.03	12.00	15.00
	methylene chloride	4	5	2.00	3.00	TB-II-8-10	2.70	6.05	12.00	12.00
	tetrachloroethene	1	5	2.00	2.00	TB-II-3-6	4.95	12.38	11.00	15.00
	toluene	2	5	2.00	2.00	TB-II-3-6	4.04	15.37	12.00	15.00
BNAs	2,4-dimethylphenol	5	16	86.00	1100.00	TB-II-2-6	490.00	1451.98	400.00	5900.00
	2-methylnaphthalene	3	15	130.00	230.00	TB-II-6-8	528.98	1631.71	400.00	5900.00
	4-methylphenol	2	15	210.00	1400.00	TB-II-2-6	607.60	1390.47	400.00	5900.00
	acenaphthene	5	15	150.00	460.00	TB-II-4-4	458.28	1465.46	400.00	5900.00
		400.00								
	acenaphthylene	9	16	93.00	1100.00	TB-II-SS1	449.22	1542.34	400.00	5900.00
			400.00							
	anthracene	11	16	100.00	1900.00	TB-II-4-4	579.58	1681.50	410.00	3600.00
	benzo(a)anthracene	13	16	45.00	5300.00	TB-II-SS1	812.73	5028.41	410.00	3600.00
	benzo(a)pyrene	14	16	54.00	6200.00	TB-II-SS1	955.50	5941.40	410.00	3600.00
	benzo(b)fluoranthene	15	16	68.50	9200.00	TB-II-SS1	1251.59	8759.57	410.00	410.00
	benzo(g,h,i)perylene	11	16	98.00	2200.00	TB-II-SS1	526.16	1487.21	400.00	3600.00
	benzo(k)fluoranthene	10	16	160.00	3700.00	TB-II-SS1	679.72	2212.30	400.00	3600.00
	bis(2-ethylhexyl)phthalate	4	16	76.00	290.00	TB-II-7-8	491.60	1544.86	410.00	5900.00
	butylbenzylphthalate	1	16	72.00	72.00	TB-II-S5	560.12	1591.96	400.00	5900.00
	carbazole	5	15	83.00	630.00	TB-II-4-4	480.86	1624.85	410.00	5900.00
	chrysene	15	16	56.00	7200.00	TB-II-SS1	890.28	5853.91	410.00	410.00
	di-n-octylphthalate	1	15	17.00	17.00	TB-II-6-8	512.60	2939.68	400.00	5900.00
	dibenz(a,h)anthracene	5	16	73.00	380.00	TB-II-6-8	457.74	1354.78	400.00	3900.00
	dibenzofuran	4	15	110.00	350.00	TB-II-4-4	482.84	1719.62	400.00	5900.00
	fluoranthene	15	16	78.50	11000.00	TB-II-SS1	1487.78	11947.36	410.00	410.00
	fluorene	5	15	240.00	860.00	TB-II-4-4	591.11	1475.83	400.00	5900.00
	indeno(1,2,3-cd)pyrene	13	16	190.00	4200.00	TB-II-SS1	603.43	1898.72	400.00	3600.00
	naphthalene	4	15	130.00	230.00	TB-II-4-4	461.62	1615.18	400.00	5900.00
	phenanthrene	14	16	48.00	5100.00	TB-II-SS1	960.58	6411.62	410.00	3600.00
	pyrene	14	16	76.50	11000.00	TB-II-SS1	1415.47	11027.40	410.00	6700.00
Inor.	Arsenic	10	10	2050.00	721000.00	TB-II-1-10	27983.44	11428268.58	.	.
	Cadmium	9	10	1100.00	5000.00	TB-II-1-10	1628.20	4720.43	610.00	610.00
	Chromium	2	2	17000.00	70800.00	TB-II-1-10	34692.94	70800.00	.	.
	Lead	10	10	5800.00	1010000.00	TB-II-8-6	112966.26	3413412.57	.	.
	Zinc	10	10	44300.00	1720000.00	TB-II-8-6	154864.66	1199343.32	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Background Subsurface Soils (>2 feet)

Detect. Class	NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Limit
BNAs	2-methylnaphthalene	1	1	1400.00	1400.00	TB-II-9-6	1400.00	1400.00	.	.
	acenaphthene	1	1	3900.00	3900.00	TB-II-9-6	3900.00	3900.00	.	.
	acenaphthylene	1	1	980.00	980.00	TB-II-9-6	980.00	980.00	.	.
	anthracene	1	1	9900.00	9900.00	TB-II-9-6	9900.00	9900.00	.	.
	benzo(a)anthracene	1	1	7000.00	7000.00	TB-II-9-6	7000.00	7000.00	.	.
	benzo(a)pyrene	1	1	6600.00	6600.00	TB-II-9-6	6600.00	6600.00	.	.
	benzo(b)fluoranthene	1	1	8400.00	8400.00	TB-II-9-6	8400.00	8400.00	.	.
	benzo(g,h,i)-perylene	1	1	2300.00	2300.00	TB-II-9-6	2300.00	2300.00	.	.
	benzo(k)fluoranthene	1	1	3400.00	3400.00	TB-II-9-6	3400.00	3400.00	.	.
	carbazole	1	1	990.00	990.00	TB-II-9-6	990.00	990.00	.	.
	chrysene	1	1	7600.00	7600.00	TB-II-9-6	7600.00	7600.00	.	.
	dibenzofuran	1	1	2300.00	2300.00	TB-II-9-6	2300.00	2300.00	.	.
	fluoranthene	1	1	20000.00	20000.00	TB-II-9-6	20000.00	20000.00	.	.
	fluorene	1	1	4100.00	4100.00	TB-II-9-6	4100.00	4100.00	.	.
	indeno(1,2,3,-cd)pyrene	1	1	3500.00	3500.00	TB-II-9-6	3500.00	3500.00	.	.
	phenanthrene	1	1	12000.00	12000.00	TB-II-9-6	12000.00	12000.00	.	.
	pyrene	1	1	16000.00	16000.00	TB-II-9-6	16000.00	16000.00	.	.
Inor.	Arsenic	1	1	5800.00	5800.00	TB-II-9-6	5800.00	5800.00	.	.
	Chromium	1	1	12800.00	12800.00	TB-II-9-6	12800.00	12800.00	.	.
	Lead	1	1	34700.00	34700.00	TB-II-9-6	34700.00	34700.00	.	.
	Zinc	1	1	48400.00	48400.00	TB-II-9-6	48400.00	48400.00	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Background Sediments

Detect. Class	NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Limit
VOCs	methylene chloride	1	1	1.00	1.00	SS-3-SED	1.00	1.00	.	.
BNAs	benzo(a)pyrene	1	1	70.00	70.00	SS-3-SED	70.00	70.00	.	.
	benzo(b)fluoranthene	1	1	120.00	120.00	SS-3-SED	120.00	120.00	.	.
	benzo(k)fluoranthene	1	1	42.00	42.00	SS-3-SED	42.00	42.00	.	.
	butylbenzylphthalate	1	1	70.00	70.00	SS-3-SED	70.00	70.00	.	.
	chrysene	1	1	78.00	78.00	SS-3-SED	78.00	78.00	.	.
	fluoranthene	1	1	140.00	140.00	SS-3-SED	140.00	140.00	.	.
	indeno(1,2,3-cd)pyrene	1	1	40.00	40.00	SS-3-SED	40.00	40.00	.	.
	phenanthrene	1	1	81.00	81.00	SS-3-SED	81.00	81.00	.	.
	pyrene	1	1	160.00	160.00	SS-3-SED	160.00	160.00	.	.
Pest/PCBs	4,4'-DDD	1	1	26.00	26.00	SS-3-SED	26.00	26.00	.	.
	4,4'-DDE	1	1	5.80	5.80	SS-3-SED	5.80	5.80	.	.
	4,4'-DDT	1	1	28.00	28.00	SS-3-SED	28.00	28.00	.	.
	alpha chlordane	1	1	6.60	6.60	SS-3-SED	6.60	6.60	.	.
	delta-BHC	1	1	1.90	1.90	SS-3-SED	1.90	1.90	.	.
	dieldrin	1	1	5.40	5.40	SS-3-SED	5.40	5.40	.	.
	gamma chlordane	1	1	6.20	6.20	SS-3-SED	6.20	6.20	.	.
Inor.	Arsenic	1	1	3400.00	3400.00	SS-3-SED	3400.00	3400.00	.	.
	Chromium	1	1	24900.00	24900.00	SS-3-SED	24900.00	24900.00	.	.
	Copper	1	1	34200.00	34200.00	SS-3-SED	34200.00	34200.00	.	.
	Lead	1	1	75600.00	75600.00	SS-3-SED	75600.00	75600.00	.	.
	Zinc	1	1	100000.00	100000.00	SS-3-SED	100000.00	100000.00	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Brook Surface Water

Class	NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
Pest/PCBs	alpha-BHC	2	2	0.05	0.05	SS-1-SW	0.05	0.05	.	.
	beta-BHC	1	2	0.03	0.03	SS-1-SW	0.03	0.03	0.05	0.05
	delta-BHC	2	2	0.01	0.05	SS-2-SW	0.03	0.05	.	.
	lindane	1	2	0.01	0.01	SS-2-SW	0.02	0.01	0.06	0.06
Inor.	Arsenic	2	2	2.10	2.70	SS-2-SW	2.38	2.70	.	.
	Chromium	2	2	18.60	24.20	SS-2-SW	21.22	24.20	.	.
	Copper	1	2	3.50	3.50	SS-2-SW	2.29	3.50	3.00	3.00
	Zinc	2	2	67.65	69.90	SS-1-SW	68.77	69.90	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Filtered Surface Water

Class	Name	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
Inor.	Arsenic	2	2	3.10	3.10	SS-1-SW-AD	3.10	3.10	.	.
	Chromium	2	2	17.00	20.75	SS-2-SW-AD	18.78	20.75	.	.
	Copper	1	2	9.60	9.60	SS-2-SW-AD	3.79	9.60	3.00	3.00
	Zinc	2	2	62.40	67.05	SS-2-SW-AD	64.68	67.05	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Filtered Surface Water

Class	Name	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
VOCs	tetrachloroethene	1	1	1.00	1.00	SW-3-SW	1.00	1.00	.	.
Pest/PCBs	alpha-BHC	1	1	0.05	0.05	SW-3-SW	0.05	0.05	.	.
	delta-BHC	1	1	0.03	0.03	SW-3-SW	0.03	0.03	.	.
	lindane	1	1	0.01	0.01	SW-3-SW	0.01	0.01	.	.
Inor.	Arsenic	1	1	2.90	2.90	SW-3-SW	2.90	2.90	.	.
	Chromium	1	1	26.40	26.40	SW-3-SW	26.40	26.40	.	.
	Zinc	1	1	72.20	72.20	SW-3-SW	72.20	72.20	.	.

TABLE 5A

SUMMARY STATISTICS FOR THE RENORA SITE, BY CHEMICAL AND MEDIUM/AREA
ALL UNITS IN PPB

TYPE=Background Filtered Surface Water

Class	NAME	Num. Times Detected	Num. Samples Analyzed	Lowest Detected Conc.	Highest Detected Conc.	Highest Conc. Locat.	Geom. Mean Conc.	95 Pct. Upp. Conf. Limit	Min. Detect. Limit	Max. Detect. Limit
Inor.	Arsenic	1	1	2.60	2.60	SS-3-SW-AD	2.60	2.60	.	.
	Chromium	1	1	23.70	23.70	SS-3-SW-AD	23.70	23.70	.	.
	Zinc	1	1	77.00	77.00	SS-3-SW-AD	77.00	77.00	.	.

TABLE 6 RENORA SITE: SUMMARY OF EXPOSURE PATHWAYS

Pathway	Receptor	TIME-FRAME EVALUATED: Present	TIME-FRAME EVALUATED: Future	DEGREE OF ASSESSMENT: Quant.	DEGREE OF ASSESSMENT: Qual.	Rationale for Selection or Exclusion	Data Grouping
Ground Water							
Ingestion of Ground Water	Resident	No	Yes	X		Adjacent areas are zoned residential. Although residents currently rely on municipal water, ground water may be potable. Reportedly inactive private wells exists within one mile of the site.	All ground water samples (filtered and unfiltered).
Inhalation of Ground Water Contaminants during showers	Resident	No	No			Three volatiles were detected infrequently (in one of three samples) and at concentrations below applicable MCLs.	
Dermal Contact with Ground Water	Resident	No	No			Considered insignificant conquered to other ground water exposures.	
Surface Soils							
Incidental Ingestion of Onsite Surface Soils*	Adjacent Resident (youth trespasser)	Yes	Yes	X		Youths may trespass on the site.	All surface soils (0' - 2')
	Adjacent Resident (adult and child)	No	Yes	X		Future site development (e.g., park or ballfield) may result is frequent visitations by adjacent residents.	All surface soils (0' - 2')
Dermal Contact with Onsite Surface Soils**Ë**	Adjacent Resident (youth trespasser)	Yes	Yes	X		Youths may trespass on the site.	All surface soils (0' - 2')
	Adjacent Resident (adult and child)	No	Yes	X		Future site development (e.g., park or ballfield) may result is frequent visitations by adjacent residents.	All surface soils (0' - 2')
Inhalation of VOC Emissions and Particulates from Surface Soils	Adjacent Resident	No	No			Considered insignificant compared to other surface soil exposures.	
Subsurface Soils							
Incidental Ingestion of Onsite Surface Soils	Excavation Worker	No	Yes	X		Exposure to subsurface soils (2' to 15') may occur during excavations for future site development.	All subsurface soils collected from depths greater than 2'and less than or equal to 15'.

TABLE 6 -CONTINUED

Pathway	Receptor	TIME-FRAME EVALUATED: Present	TIME-FRAME EVALUATED: Future	DEGREE OF ASSESSMENT: Quant.	DEGREE OF ASSESSMENT: Qual.	Rationale for Selection or Exclusion	Data Grouping
Dermal Contact with Onsite Subsurface Soils*	Excavation Worker	No	Yes	X		Exposure to subsurface soils (2' - 15') may occur during excavations for future site development.	All subsurface soils collected from depths greater than 2' and less than or equal to 15'.
Sediments							
Incidental Ingesion of Sediments	Adjacent Resident (youth trespasser)	Yes	Yes	X		Youths may trespass on the site.	All sediment samples.
	Adjacent Resident (adult and child)	No	Yes	X		Future site development (e.g., park or ballfield) may result in frequent visitations by adjacent residents.	All sediments samples.
Dermal Contact with Sediments**	Adjacent Resident (youth trespasses)	Yes	Yes		X	Youths may trespass on the site.	All sediment samples.
	Adjacent Resident (adult and child)	No	Yes		X	Future site develpoment (e.g., park or ballfield) may result in frequent visitations by adjacent.	All sediments samples.
Inhalation of VOC Emissions and Particulates from Sediments	Adjacent Resident	No	No			Moisture content, abscence of physical disturbance and vegetation limit release of particulates.	
Surface Water							
Incidental Ingestion of Surface Water	Adjacent Resident	No	No			Anticipated activity involves negligible exposure via the oral route. Mill Brook is shallow.	All surface water samples.
Dermal Contact with Surface Water	Adjacent Resident	Yes	Yes	X		Youth may currently trespass and future site development (e.g., park or ballfield) may result in frequent visitations.	All surface water samples.

*Cadmium only
** Cannot be evaluated quantitatively given lack of data for dermal pathway for chemicals detected.

TABLE 6A TOXICITY VALUES FOR ALL CONTAMINANTS OF CONCERN AT THE RENORA SITE

	CARCINOGENIC			CHRONIC	SUBCHRONIC
Chemical	Weight of Evidence Classifiction		Oral Slope Factor (mg/kg/day)-1	Chronic Oral RfD (mg/kg/day)	Subchronic Oral RfD (mg/kg/day)
Volatiles					
Acetone	D	a		1.00E-01 a	1.00E+00 b
Benzene	A	a	2.90E-02 a		
2-Butanone	D	a		5.00E-02 b	5.00E-01 b
Chloroethane (ethyl chloride)	B2	c	2.90E-03 c	4.00E-01 c	4.00E-01 h
Ethylbenzene	D	a		1.00E-01 a	1.00E+00 b
2-Hexanone (MBK)	D	c		4.00E-02 c	
Methylene chloride	B2	a	7.50E-03 a	6.00E-02 a	6.00E-02 b
Tetrachloroethylene	B2-C	c	5.20E-02 c	1.00E-02 a	1.00E-01 b
Toluene	D	a		2.00E-01 a	2.00E+00 b
1,1,1-Trichloroethylene	D	a		9.00E-02 b	9.00E-01 b
Xylenes	D	a		2.00E+00 a	4.00E+00 b
BNAs					
Acenaphthene	-	a		6.00E-02 a	6.00E-01 b
Acenaphthylene	D	a			
Anthracene	D	a		3.00E-01 a	3.00E-01 b
Benzo(a)anthracene	B2	a	7.30E-01 d		
Benzo(a)pyrene	B2	a	7.30E+00 a		
Benzo(b)fluoranthene	B2	a	7.30E-01 d		
Benzo(g,h,i)perylene	D	a			
Benzo(k)fluoranthene	B2	a	7.30E-01 d		
Benzylbutylphthalate	C	a.or		2.00E-01 a	2.00E+00 b
Bis(2-ethylhexyl)phthalate	B2	a	1.40E-02 a	2.00E-02 a	2.00E-02 b
Chrysene	B2	a	7.30E-02 d		
Dibenzofuran	D	a		4.00E-03 c	4.00E-03 h
Dibenz(a,h)anthracene	B2	a	7.30E+00 d		
2,4-Dimethylphenol	-	a		2.00E-02 a	2.00E-01 b
Di-n-octyl phthalate	-			2.00E-02 b	2.00E-02 b
Fluoranthene	D	a		4.00E-02 a	4.00E-01 b
Fluorene	D	a		4.00E-02 a	4.00E-01 b
Indeno(1,2,3-cd)pyrene	B2	a	7.30E-01 d		
2-Methylnaphthalene	-				
4-Methylphenol (p-cresol)	C	a		5.00E-02 b	5.00E-01 b
Naphthalene	D	a		4.00E-02 b	4.00E-02 b
Phenanthrene	D	a			
Pyrene	D	a		3.00E-02 a	3.00E-01 b
Pesticides					
alpha-BHC	B2	a	6.30+00 a		
beta-BHC	C	a	1.80+00 a		
delta-BHC	-				

TABLE 6A TOXICITY VALUES FOR ALL CONTAMINANTS OF CONCERN AT THE RENORA SITE

	CARCINOGENIC		CHRONIC	SUBCHRONIC
Chemical	Weight of Evidence Classifiction	Oral Slope Factor (mg/kg/day)-1	Chronic Oral RfD (mg/kg/day)	Subchronic Oral RfD (mg/kg/day)
gamma-BHC (Lindane)	B2-C b	1.30E+00 b	3.00E-04 a	3.00E-03 b
alpha-Chlordane (r)	B2 a	1.30E+00 a	6.00E-05 a	6.00E-05 b
gamma-Chlordane (r)	B2 a	1.30E+00 a	6.00E-05 a	6.00E-05 b
4,4' DDD	B2 a,j	2.40E-01 a		
4,4' DDE	B2 a	3.40E-01 a		
4,4' DDT	B2 a	3.40E-01 a	5.00E-04 a	5.00E-04 b
Dieldrin	B2 a	1.60E+01 a	5.00E-05 a	5.00E-05 b
Endrin ketone				
Heptachlor	B2 a	4.50E+00 a	5.00-04 a	5.00E-04 b
Inorganics				
Arsenic	A a	1.75E+00 e	3.00E-04 a	3.00E-04 b
Cadium	B1 a,i		5.00E-04 a,f	5.00E-04 h
Chromium, total	--		8.76E-01 g	8.78E-01 g
Chromium, VI	A a,i		5.00E-03 a	2.00E-02 b
Copper	D a		5.00E-02 c	5.50E-01 b
Lead	B2 a			
Zinc	D a		2.00E-01 b	2.00E-01 b

a. From IRIS.
b. From HEAST.
c. Interim value from ECAO.
d. Oral slope Factor for B(a)P used PAHs classified as B2 carcinogens with TEFs applied
e. Arsenic oral slope factor derived from unit risk in IRIS.
f. Cadmium RfD is for water: 1.0E-03 mg/kg/day is RfD for food.
g. Value is weighted-average value of the Hex and Tri RfDs assuming 7 parts Tri to 1 part Hex.
h. Chronic RfD used as Subchronic RfD is no Subchronic value is available per RAGS.
i. EPA Weight of Evidence Classification listed in HEAST under inhalation route only.
j. EPA Weight of Evidence Classification listed in HEAST under oral route only.

TABLE 7 SUMMARY OF CARCINOGENIC RISK ESTIMATED FOR THE RENORA SITE

Scenario	Receptor	Present/Future	Total Risk
Unfiltered Ground water			
Ingestion	Resident	F	1 x 10-3**
Filtered Ground Water			
Ingestion	Resident	F	3 x 10-4*
Surface Soil			
Ingestion	Youth Trespasser	P/F	1 x 10-5*
Ingestion	Adjacent Resident	F	8 x 10-5*
Subsurface			
Ingestion	Excavation Worker	F	2 x 10-5*
Sediments			
Ingestion	Youth Trespasser	P/F	3 x 10-6*
Ingestion	Adjacent Resident	F	2 x 10-5*
Surface Water			
Dermal Contact	Adjacent Resident	P/F	6 x 10-7

*Exceeds 10-6 risk
**Exceeds 10-4 risk

TABLE 8 SUMMARY OF NONCARCINOGENIC HAZARD INDICES (HI) ESTIMATED FOR THE RENORA SITE

Scenario	Receptor	Present/Future	Chronic HI
Unfiltered Ground Water			
Ingestion	Resident	F	5 x 10+0*
Filtered Ground Water			
Ingestion	Resident	F	1 x 10+0
Surface Soil			
Ingestion	Youth Trespasser	P/F	2 X 10-2
Dermal Conatct	Youth Trespasser	P/F	1 X 10-2(a)
		Total	3 x 10-2
Ingestion	Adjacent Resident	F	2 x 10-1
Dermal Contact	Adjacent Resident	F	2 x 10-2(a)
		Total	2 x 10-1
Subsurface Soil			
Ingestion	Excavation Worker	F	1 x 10+1(b)
Dermal Contact	Excavation Worker	F	9 x 10-3(a)(b)
		Total	1 x 10+1
Sediments			
Ingestion	Youth Trespasser	P/F	3 x 10-2
Ingestion	Adjacent Resident	F	2 x 10-1
Surface Water			
Dermal Contact	Adjacent Resident	P/F	1 x 10-3

*-HI exceeds one (1)
(a) - HI is for cadmium only.
(b) - Hi is based on Subchronic Protective Body Dose.

TABLE 9 RENORA SITE ECOLOGICAL RISK ASSESSMENT: CONTAMINANTS OF CONCERN

Contaminant	Surface Water	Sediment
VOLATILES		
Acetone		X
Methylene chloride		X
Tetrachloroethene		X
BASE-NEUTRAL/ACID EXTRACTABLES		
Dibenzofuran		X
Carbazole		X
PAHs		
Acenaphthene		X
Anthracene		X
Benzo(a)anthracene		X
Benzo(b)fluoranthene		X
Benzo(k)fluoranthene		X
Benzo(a)pyrene		X
Benzo(g,h,i)perylene		X
Chrysene		X
Dibenz(a,h)anthracene		X
Fluoranthene		X
Fluorene		X
Indeno(1,2,3-cd)pyrene		X
Phenanthrene		X
Pyrene		X
PESTICIDES		
Alpha-BHC	X	
Beta-BHC	X	
Delta-BHC	X	X
Gamma-BHC (Lindane)	X	
Dieldrin		X
Heptachlor		X
Alpha Chlordane		X
Gamma Chlordane		X
Endrin Ketone		X

TABLE 9 - CONTINUED

Contaminant	Surface Water	Sediment
4,4-DDE		X
4,4-DDD		X
4,4-DDT		X
INORGANICS		
Arsenic	X	X
Chromium, Total	X	X
Copper	X	X
Lead		X
Zinc	X	X

TABLE 10 SURFACE WATER ECOLOGICAL RISK SUMMARY

CONTAMINANT OF CONCERN	SURFACE WATER CONCENTRATION (ug/l)		WATER QUALITY VALUE1 (ug/l)		RISK INDICES2 FOR ACUTE CRITERIA		RISK INDICES2 FOR CHRONIC CRITERIA	
	MEAN	MAXIMUM	ACUTE	CHRONIC	MEAN	MAXIMUM	MEAN	MAXIMUM
alpha-BHC	5.00E-02	5.00E-02	1.00E+02	-	5.0E-04	5.0E-04	-	-
beta-BHC	3.00E-02	3.00E-02	1.00E+02	-	3.0E-04	3.0E-04	-	-
delta-BHC	3.00E-02	3.00E-02	1.00E+02	-	3.0E-04	5.0E-04	-	-
gamma-BHC (Lindane)	2.00E-02*	1.00E-02	2.00E+00	8.00E-02	1.0E-02	5.0E-03	2.5E-01	1.2E-01
Arsenic	2.38E+00	2.70E+00	3.60E+02	1.90E+02	6.6E-03	7.5E-03	1.3E-02	1.4E-02
Chromium	2.12E+01	2.42E+01	1.60E+01	1.10E+01	1.3E+00	1.5E+00	1.9E+00	2.2E+00
Copper	2.29E+00	3.50E+00	1.60E+01	1.20E+01	1.3E+01	1.9E-01	1.9E-01	2.9E-01
Zinc	6.88E+01	6.99E+01	1.60E+02	1.20E+02	5.7E-01	5.8E-01	6.3E-01	6.4E+00
			TOTAL RISK INDEX		2.0E+00	2.3E+00	3.0E+00	3.3E+00

- No data available.
* Maximum detected concentration below detection limit. One-half detection limit was utilized for non-detects, therefore, average concentration is greater than maximum concentration.

1 Water Quality Criteria from Table 5-4.
2 Risk Index = COC concentration (average or maximum) divided by quality value (acute or chronic)

Note: Shading indicates a risk greater than one.

TABLE 11 SEDIMENT ECOLOGICAL RISK SUMMARY

CONTAMINANT OF CONCERN	SEDIMENT CONCENTRATION (mg/kg) MEAN	SEDIMENT CONCENTRATION (mg/kg) MAX.	GUIDELINE VALUES1 ER-MEDIAN (mg/kg)	GUIDELINE VALUES1 ER-LOW (mg/kg)	SEDIMENTS RISK INDICES2 EFFECTS RANGE MEDIAN MEAN	SEDIMENTS RISK INDICES2 EFFECTS RANGE MEDIAN MAX.	SEDIMENTS RISK INDICES2 EFFECTS RANGE LOW MEAN	SEDIMENTS RISK INDICES2 EFFECTS RANGE LOW MAX.
Acetone	9.87E-03	1.50E-02	-	-	-	-	-	-
Methylene chloride	3.61E-03	2.00E-03*	-	-	-	-	-	-
Tetrachloroethene	4.42E-03	3.00E-03*	1.40E-01	-	3.2E-02	2.1E-02	-	-
Carbazole	1.10E-01	2.50E-01	-	-	-	-	-	-
Dibenzofuran	1.22E-01	6.90E-02*	5.40E-01	-	2.3E-01	1.3E-01	-	-
Acenaphthene	1.47E-01	1.00E-01*	6.50E-01	1.50E-01	2.3E-01	1.5E-01	9.8E-01	6.7E-01
Anthracene	2.06E-01	4.40E-01	9.60E-01	8.50E-02	2.1E-01	4.6E-01	2.4E+00	5.2E+00
Benzo(a)anthracene	4.85E-01	7.60E-01	1.60E+00	2.30E-01	3.0E-01	4.7E-01	2.1E+00	3.3E+00
Benzo(b)fluoranthene	7.05E-01	9.20E-01	8.00E+00	-	8.8E-02	1.2E-01	-	-
Benzo(k)fluoranthene	2.65E-01	3.70E-01	8.00E+00	-	3.3E-02	4.6E-02	-	-
Benzo(g,h,i)perylene	1.05E-01	1.50E-01	5.40E+00	-	1.9E-02	2.8E-02	-	-
Benzo(a)pyrene	4.49E-01	6.30E-01	2.50E+00	4.00E-01	1.8E-01	2.5E-01	1.1E+00	1.6E+00
Chrysene	4.95E-01	7.20E-01	2.80E+00	4.00E-01	1.8E-01	2.6E-01	1.2E+00	1.8E+00
Dibenz(a)anthracene	1.34E-01	8.30E-02*	2.60E-01	6.00E-02	5.1E-01	3.2E-01	2.2E+00	1.4E+00
Fluoranthene	1.06E+00	1.70E+00	3.60E-01	6.00E-01	2.9E-01	4.7E-01	1.8E+00	2.8E+00
Fluorene	9.30E-02	1.80E-01	6.40E-01	3.50E-02	1.5E-01	2.8E-01	2.7E+00	5.1E+00
Indeno(1,2,3-cd)pyrene	2.09E-01	2.90E-01	5.20E+00	-	4.0E-02	5.6E-02	-	-
Phenanthrene	8.58E-01	1.60E+00	1.38E+00	2.25E-01	6.2E-01	1.2E+00	3.8E+00	7.1E+00
Pyrene	1.04E+00	1.50E+00	2.20E+00	3.50E-01	4.7E-01	6.8E-01	3.0E+00	4.3E+00
4,4-DDD	4.04E-02	6.80E-02	2.00E-02	2.00E-03	2.0E-01	3.4E+00	2.0E+01	3.4E+01
4,4-DDE	1.01E-02	1.70E-02	1.50E-02	2.00E-03	6.7E-01	1.1E+00	5.0E+00	8.5E+00
4,4-DDT	4.16E-02	9.60E-02	7.00E-03	1.00E-03	5.9E+00	1.4E+01	4.2E+01	9.6E+01
Alpha chlordane	1.16E-02	1.70E-02	6.00E-03	5.00E-04	1.9E+00	2.8E+00	2.3E+01	3.4E+01
Gamma chlordane	1.21E-02	1.80E-02	6.00E-03	5.00E-04	2.0E+00	3.0E+00	2.4E+01	3.6E+01
Dieldrin	9.24E-03	1.40E-02	8.00E-03	2.00E-05	1.2E+00	1.8E+00	4.6E+02	7.0E+02
Delta-BHC	1.40E-03	1.40E-03	-	-	-		-	-

TABLE 11 SEDIMENT ECOLOGICAL RISK SUMMARY (continued)

CONTAMINANT OF CONCERN	SEDIMENT CONCENTRATION (mg/kg) MEAN	SEDIMENT CONCENTRATION (mg/kg) MAX.	GUIDELINE VALUES1 ER-MEDIAN (mg/kg)	GUIDELINE VALUES1 ER-LOW (mg/kg)	SEDIMENTS RISK INDICES2 EFFECTS RANGE MEDIAN MEAN	EFFECTS RANGE MEDIAN MAX.	EFFECTS RANGE LOW MEAN	EFFECTS RANGE LOW MAX.
Endrin Ketone	4.80E-03	4.80E-03	-	-	-	-	-	-
Heptachlor	7.80E-04	7.80E-04	-	-	-	-	-	-
Arsenic	7.86E+00	1.26E+01	8.50E+01	3.30E+01	9.2E-02	1.5E-01	2.4E-01	3.8E-01
Chromium, Total	2.57E+01	3.04E+01	1.45E+02	8.00E+01	1.8E-01	2.1E-01	3.2E-01	3.8E-01
Copper	3.40E+01	3.76E+01	3.90E+02	7.00E+01	8.7E-02	9.6E-02	4.9E-01	5.4E-01
Lead	6.30E+01	1.00E+02	1.10E+02	3.50E+01	5.7E-01	9.1E-01	1.8E+00	2.9E+00
Zinc	1.08E+02	1.10E+02	2.70E+02	1.20E+02	4.0E-01	4.1E-01	9.0E-01	9.2E-01
			TOTAL RISK INDEX		1.9E+01	3.3E+01	6.0E+02	9.5E+02

- No data available.
* Maximum detected concentration below detection limit. One-half detection limit was utilized for non-detects, therefore, average concentration > maximum concentration.

1 Sediments Guidelines from Table 5-5.
2 Risk Indices=Contaminant Sediment Concentration (average or maximum) divided by sediment guideline.

Note: Shading indicates a risk Index greater than one.

TABLE 12

PRESENT WORTH ANALYSIS*
ALTERNATIVE 1-NO ACTION/ACCESS RESTRICTIONS
RENORA SUPERFUND SITE
8/14/94

CAPITAL COSTS

DESCRIPTION	UNITS	QUANTITY	UNIT COST ($)	TOTAL COST ($)	PRESENT WORTH ($)
Close All Five Monitoring Welts	each	5	$500	$2,500	$2,500
TOTAL CAPITAL COST					$2,500

OPERATION AND MAINTENANCE COSTS

DESCRIPTION	UNITS	QUANTITY	UNIT COST ($)	TOT.ANNUAL COST ($)	OPERATING TIME (yrs)	BEGIN YEAR	PRESENT WORTH ($)
5 year review	L.S	5	20,000	!	30	5	$55,640
TOTAL O&M COSTS							$55,640
Subtotal							$58,140
Contingency, @ 20%							$11,628
TOTAL							$69,768
TOTAL PRESENT WORTH (ROUNDED)							$70,000

Notes:
! A discount rate of 5% was used for present worth calculations to determine costs in 1994 dollars.

TABLE 13
ALTERNATIVE 2-ASPHALT CAP/ACCESS RESTRICTIONS
RENORA SUPERFUND SITE
8/14/94

CAPITAL COSTS

DESCRIPTION	UNITS	QUANTITY	UNIT COST ($)	TOTAL COST ($)	PRESENT WORTH ($)
Site Preparation/Equip Mobilization and Demobilization (1)	L.S	1	$5,000	$5,000	$5,000
Close Monitoring Walls	each	5	$500	$2,500	$2,500
Install Asphalt Cap (2)	sq. yds	5,324	$20	$106,480	$106,480
Installation of Storm Water Control System	L.S.	1	$5,000	$5,000	$5,000
Offsite Disposal of Wastewater (3)	gallons	5,000	$0.75	$3,750	$3,750
Replacement of Fencing Around Entire Site	L.f.	800	$21	$16,800	$16,000
Construction Oversite (4)	L.S.	1	$25,000	$25,000	$25,000
Subtotal					$164,530
Engineering @ 15%					$24,680
TOTAL CAPITAL COSTS					$189,210

OPERATION AND MAINTENANCE COSTS

DESCRIPTION	UNITS	QUANTITY	UNIT COST ($)	TOT.ANNUAL COST ($)	OPERATING TIME(yrs)	BEGIN YEAR	PRESENT WORTH ($)
Yearly Repair to Asphalt Cap (Conducted by Local Contractor)	L.S.	1	$2,000	$2,000	30	1	$30,740
Inspections and Reporting	L.S.	1	$5,000	$5,000	30	1	$76,850
5 Year review	L.S.	6	$20,000	-	30	5	$55,640
Resurface Capped Area (5)	L.S.	2	$50,000	-	1	15	$24,050
					1	30	$11,570
TOTAL O&M COSTS							$198,850
Subtotal							$388,060
Contingency, @ 20%							$77,612
TOTAL							$465,672
TOTAL PRESENT WORTH (ROUNDED)							$455,000

Notes:
* A discount rate of 5% was used for present worth calculations to determine costs in 1994 dollars.

(1) Site preparations includes construction of equipment decontamination pad, mobilization and demobilization of equipment, and fence removal.
(2) Installation of the asphalt cap is assumed to take 15 days.
(3) For costing purposes it is assumed that the wastewater will be disposed of as hazardous waste.
(4) Construction Oversite costs include one onsite engineer and H&S officer (10 hrs/day) and a weekly field visit and 40 hrs of in-office project management by the project manager.
(5) Resurfacing of the asphalt cap is assumed to be needed twice after installation; at 15 and 30 years. The unit cost for this replacement includes Construction Oversight.

TABLE 14

PRESENT WORTH ANALYSIS*
ALTERNATIVE 3 - FML/CLAY CAP/ACCESS RESTRICTIONS
RENORA SUPERFUND SITE
8/14/94

CAPITAL COSTS

DESCRIPTION	UNITS	QUANTITY	UNIT COST ($)	TOTAL COST ($)	PRESENT WORTH ($)
Site Preparation/Equip Mobilization and Demobilization (1)	L.S.	1	$5,000	$5,000	$5,000
Close Monitoring Wells	each	5	$500	$2,500	$2,500
Install FML/Clay Cap (2)	sq.yds	5,324	$59	$314,116	$314,116
Installation of Storm Water Control System	L.S.	1	$5,000	$5,000	$5,000
Offsite Disposal of Wastewater (3)	gallons	5,000	$0.75	$3,750	$3,750
Replacement of Fencing Around Entire Site	L.f.	800	$21	$16,880	$16,800
Construction Oversight (4)	L.S.	1	$50,000	$50,000	$50,000
Subtotal					$397,166
Engineering @ 15%					$59,575
TOTAL CAPITAL COSTS					455,741

OPERATION AND MAINTENANCE COSTS

DESCRIPTION	UNITS	QUANTITY	UNIT COST ($)	TOT.ANNUAL COST ($)	OPERATING TIME (YRS)	BEGIN YEAR	PRESENT WORTH ($)
Vegetation Mowing (Conducted by Local Landscaper)	each	4	$100	$400	30	1	$6,148
5 year review	L.S.	6	$20,000	-	30	5	$55,640
Inspections and Reporting	L.S	1	$5,000	$5,000	30		$78,850
TOTAL O&M COSTS							$138,638
Subtotal							$595,379
Contingency, @ 20%							$119,076
TOTAL							$714,455
TOTAL PRESENT WORTH (ROUNDED)							$714,000

Notes:
 * A discount rate of 5% was used for present worth calculations to determine costs in 1994 dollars.

(1) Site preparations includes construction of equipment decontamination pad, mobilization and demobilization of equipment, and fence removal.
(2) Installation of the FML/Clay cap is assumed to take 30 days.
(3) For costing purposes it is assumed that the wastewater will be disposed of as hazardous waste.
(4) Construction Oversite costs include one onsite engineer and H&S officer (10 hrs/day) and a weekly field visit and 40 hrs of in-office project management by the project manager.

TABLE 15

PRESENT WORTH ANALYSIS*
ALTERNATIVE 4 - EXCAVATION (2 FEET) OFFSITE DISPOSAL
RENORA SUPERFUND SITE
8/14/94

CAPITAL COSTS

DESCRIPTION	UNITS	QUANTITY	UNIT COST ($)	TOTAL COST ($)	PRESENT WORTH ($)
Site Preparation/Equip Mobilization and Demobilization (1)	L.S.	1	$30,000	$30,000	$30,000
Close Monitoring Wells	each	5	$500	$2,500	$2,500
Initial Site Survey	L.S.	1	$3,000	$3,000	$3,000
Excavation of soil and debris (2)	tons	5,500	$14	$77,000	$77,000
Transport and disposal of soil at offsite landfill facility (3)	tons	5,000	$345	$1,897,500	$1,897,500
Offsite Disposal of Wastewater (4)	gallons	25,000	$0.75	$18,750	$18,750
Backfilling (delivery and placement of material)	tons	5,000	$11	$60,500	$60,500
Construction Oversite (5)	L.S.	1	$35,000	$35,000	$35,000
Post-Excavation Sample Analysis	N/A				
Final Site Survey	L.S.	1	$3,000	$3,000	$3,000
Replacement of Fencing Around Entire Site	Lf.	800	$21	$16,800	$16,800
Subtotal					$2,144,050
Engineering					$200,000
TOTAL CAPITAL COSTS					$2,344,050

OPERATION AND MAINTENANCE COSTS

DESCRIPTION	UNITS	QUANTITY	UNIT COST ($)	TOT.ANNUAL COST ($)	OPERATING TIME(YRS)	BEGIN YEAR	PRESENT WORTH ($)
TOTAL O&M COSTS							$0
Subtotal							$2,344,050
Contingency, @ 20%							$458,810
TOTAL							$2,812,860
TOTAL PRESENT WORTH (ROUNDED)							$2,813,000

Notes:
 * A discount rate of 5% was used for present worth calculations to determine costs in 1994 dollars.

(1) Site preparations includes construction of equipment decontamination pad, mobilization and demobilization of equipment, and fence removal.
(2) Excavation is assumed to take 15 days and backfilling is assumed to take 5 days.
(3) For costing purposes it is assumed that all excavated soil will be disposed of as hazardous waste; at 10% overexcavation would occur; and that the bulk denalty is 1.4.
(4) Wastewater will consist of water pumped from the excavation and water from the decontamination of equipment and debris. For costing purposes it is assumed that the wastewater will be disposed of as hazardous waste.
(5) Construction Oversite cost include one onsite engineer and H&S officer (10 hrs/day) and a weekly field visit and 40 hrs of in-office project management by the project manager.

TABLE 16

APPLICABLE RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Chemical Specific ARARs

Federal Risk-Based Standards

Action-Specific ARARs

National Ambient Air Quality Standards, 40 CFR 50 New Jersey
Air Pollution Act N.J.A.C. &;27-1 et seq.
Occupational Safety and Health Act, 29 CFR Parts 1904, 1910
and 1926
Resource Conservation and Recovery Act,40 CFR 264.310(a)
Resource Conservation and Recovery Act, 40 CFR Parts 261,
264 and 270
Department of Transportation, 40 CFR Parts 107 and 171-179
New Jersey Solid and Hazardous Waste Management Regulations,
N.J.S.A. 13:E-1
New Jersey Solid Waste Management Act, N.J.A.C. 26-6.2
New Jersey Interdistrict and Intradistrict Solid Waste
Flows, N.J.A.C.:26-6.2
New Jersey Noise Control Regulations, N.J.A.C. 7:29-1

Location-Specific ARARs

Fish and Wildlife Coordination Act, 16 U.S.C. 661 et seq.
Executive Order 11988 (40 CFR 6, Appendix A), Floodplain Management

APPENDIX III
ADMINISTRATIVE RECORD INDEX

Index Document Number Order
RENORA Documents

Document Number: REN-002-0523 To 0607 Date: 09/29/87

Title: Declaration for thc Record of Decision for the RENORA, Inc., site)

Type: LEGAL DOCUMENT
Author: Daggett, Christopher J.: US EPA
Recipient: none: none

Document Number: REN-002-0608 To 0739 Date: 07/01/89

Title: Manifests for Hazardous Waste Shipped Offsite for Renora PCB Excavation - Appendix A

Type: REPORT
Author: Betz Converse Murdoch (BCM)

Document Number: REN-002-0740 To 0756 Date: 01/07/93

Title: Stream Bioassessment, Mill Brook, New Jersey, Renora Site

Type: REPORT
Author: US EPA

Document Number: REN-002-0757 To 0924 Date: 06/01/92

Title: Report of Sampling Results for Renora Site Remediation to U.S. Envirnmental Protection Agency - Region II and the The Renora Trust

Type: REPORT
Author: Betz Converse Murdoch (BCM)
Recipient: US EPA

Document Number: REN-002-0925 To 0973 Date: 01/17/90

Title: Sampling and Analysis Results for the PCB Excavation and Offsite Landfilling Phase of the Renora Site Remediation in Borhamtown, New Jersey

Type: DATA
Author: Betz Converse Murdoch (BCM)
Recipient: US EPA

Document Number: REN-002-0974 To 1349 Date: 12/05/89

Title: Analytical Results Report of Bioremediation Treatability Study

Type: DATA
Author: Sybron Corporation

Document Number: REN-002-1350 To 1628 Date: 10/23/89

Title: Bench-Scale Bioremediation Studies for Renora Site Soils

Type: REPORT
Author: Ecove Corporation
Recipient: Betz Converse Murdoch (BCM)

Document Number: REN-002-1629 To 1863 Date: 07/14/89

Title: Analytical Results Report of Boiremediataion Treatability Study

Type: REPORT
Author: Sybron Corporation

Document Number: REN-002-1864 To 1917 Date: 01/01/89

Title: Bioremediation Treatability Study Work Plan for Renora Site Remediation

Type: PLAN
Author: Sybron Corporation

Document Number: REN-002-1918 To 2305 Date: 05/05/93

Title: Final Risk Assessment, Renora Inc. Site, Edison Township, New Jersey

Type: REPORT
Author: TRC Enviromental Corporation, Inc.
Recipient: US EPA

Document Number: REN-002-2306 To 2308 Date: 07/05/90

Title: (Letter regarding options for immediate mitigation of oil seeps into Mill Brook)
Renora Site Remediation in Borhamtown, New Jersey

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse (BCM)
Recipient: Harney, Joyce: US EPA
Attachment: REN-002-2309 REN-002-2310 REN-002-2311

Document Number: REN-002-2309 To 2309 Parent: REN-002-2306 Date: / /

Title: Figure 1, Property Layout and Location of Oil Seep

Type: GRAPHIC
Author: none: Betz Converse Murdoch (BCM)
Recipient: none: none

Document Number: REN-002-2310 To 2310 Parent: REN-002-2306 Date: / /

Title: Figure 2, Filter Fence Concept

Type: GRAPHIC
Author: Betz Converse Murdoch (BCM)
Recipient: none

Document Number: REN-002-2311 To 2311 Parent: REN-002-2306 Date: / /

Title: Figure 3, Stilling Well Concept

Type: GRAPHIC
Author: none: Betz Converse Murdoch (BCM)
Recipient: none: none

Document Number: REN-002-2312 To 2313 Date: 05/16/90

Title: (Letter regarding the informal treatability study)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA

Document Number: REN-002-2314 To 2315 Date: 01/22/90

Title: (Letter forwarding the final version of BCM Engineer's Draft Sampling and Analysis Results for the PCB Excavation and Offsite landfilling Phase of the Renora Site Remediation)

Type: CORRESPONDENCE
Author: Hyatt, William H.: Pitney, Hardin, Kipp & Szuch
Recipient: various: various

Document Number: REN-002-2316 To 2468 Date: 05/01/94

Title: Phase II Feasibility Study Report for Renora Inc. Site, Edison, New Jersey

Type: REPORT
Author: none: Betz Converse Murdoch (BCM)
Recipient: Renora Trust

Document Number: REN-002-2469 To 0281 Date: 01/01/93

Title: Report of Supplemental Information to the Phase II Feasability Study, Renora Superfund Site, Edison, New Jersy

Type: REPORT
Author: Betz Converse Murdoch (BCM)
Recipient: US EPA
MJ Department of Environmental Protection (NJDEP)

Document Number: REN-003-0282 To 0287 Date: 02/24/93

Title: (Letter providing additional summary information relating to the Phase II Feasibility Study for the Renora Inc. Site)

Type: CORRESPONDENCE
Author: Rochat-Melbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0288 To 0288 Date: 12/08/92

Title: (Letter Forwarding the enclosed letter report entitled "Supplemental to Technical Review of June 18, 1992 Report of Sampling Results for Renora Site Remediation Phase II Feasability Study, Renora, Inc. Bonhamtown, New Jersey")

Type: CORRESPONDENCE
Author: Graber, Scott B.: Camp Dresser & McKee (CDM)
Recipient: Smieszek, Erwin: US EPA
Attachment: REN-003-0289

Document Number: REN-003-0289 To 0315 Parent: REN-003-0288 Date: 12/08/92

Title: Letter Report Supplemental to TEchnical Review of June 18, 1992, Report of Sampling Results for Renora Site Remediation, Phase II Feasability Study, Renora, Inc., Bonhamtown, New Jersey

Type: REPORT
Author: none: Camp Dresser & McKee (CDM)
Recipient: none: US EPA

Document Number: REN-003-0316 To 0317 Date: 04/08/91

Title: (Letter forwarding the enclosed Revised Sampling Plan, Quality Assurance Project Plan Addendum, and the Addendum to Health and Safety Plan for additioanl sampling of soils and groundwater at the Renora Site Located in Edison, New Jersey)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara : Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0318 REN-003-0337 REN-003-0359

Document Number: REN-003-0318 To 0336 Parent: REN-003-0316 Date: 03/01/91

Title: Revised Sampling Plan for Renora Site Remediation

Type: PLAN
Author: Hanes, Kim: Betz Converse Murdoch (BCM)
Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA
none: Renora Trust

Document Number: REN-003-0337 To 0358 Parent: REN-003-0316 Date: 03/01/91

Title: Quality Assurance Project Plan Addendum for Renora Site Remediation Phase II Feasability Study

Type: PLAN
Author: Davis, Atwood F.: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0359 To 0382 Parent: REN-003-0316 Date: 03/01/91

Title: Addendum to Health and Safety Plan, Prepared May 1988 for Phase II Feasability Study, Renora Site Remediation, Edison, New Jersey

Type: PLAN
Author: Pires, Charles M.: Betz Converse Murdoch (BCM)
Recipient: none: US EPA
none: Renora Trust

Document Number: REN-003-0383 To 0383 Date: 04/08/91

Title: (Letter fowarding the enclosed report entilted, "Results of Preliminary Treatability Studies for Stabilization/Solidification and Asphalt Blending")

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0384

Document Number: REN-003-0384 To 0432 Parent: REN-003-0383 Date: 03/01/91

Title: Results of Preliminary Treatability Studies for Stabilization/Solidification and Asphalt Blending

Type: REPORT
Author: Morrow, Steven R.: Betz Converse Murdoch (BCM)
Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: Renora Trust

Document Number: REN-003-0433 To 0433 Date: 12/05/90

Title: (Letter forwarding the enclosed report entitled, "Workplan for Phase II Feasability Study, Renora Site, Edison, New Jersey")

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0434

Document Number: REN-003-0434 To 0462 Date: 12/01/90

Title: Workplan for Phase II Feasability Study, Renora Site, Edison Township, New Jersey

Type: PLAN
Author: none: Betz Converse Murdoch (BCM)
Recipient: none: US EPA
none: Renora Trust

Document Number: REN-003-0463 To 0465 Date: 09/10/90

Title: (Letter forwarding the Revised Sampling Plan, Quality Assurance Project Plan Addendum, and the Health and Safety Plan Addendum for the preliminary stabilization/solidification treatability study at the Renora Site)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney,Joyce: US EPA
Attached: REN-003-0466 REN-003-0478 REN-003-0490

Document Number: REN-003-0466 To 0477 Parent: REN-003-0463 Date: 09/01/90

Title: Revised Sampling Plan for Renora Site Remediation, Edison, New Jersey

Type: PLAN
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA
none: Renora Trust

Document Number: REN-003-0478 To 0489 Parent: REN=003-0463 Date: 09/01/90

Title: Addendum to Quality Assurance Project Plan, Prepared July 1988 for Preliminary Stabilization Solidification Treatability Study, Renora Site Remediation, Edison, New Jersey

Type: PLAN
Author: Davis, Atwood F.: Betz Converse Murdoch (BCM)
Recipient: none: US EPA
none: Renora Trust

Document Number: REN-003-0490 To 0503 Parent: REN-003-0463 Date: 09/01/90

Title: Addendum to Health and Safety Plan, Prepared May 1988 for Preliminary Stabilization/Solidification Treatability Study, Renora Site Remediation, Edison, New Jersey

Type: PLAN
Author: Pires, Charles M.: Betz Converse Murdoch (BCM)
Schneider, Christian M.: Betz Converse Murdoch (BCM)
Recipient: none: US EPA
none: Renora Trust

Document Number: REN-003-0504 To 0504 Parent: REN-003-0504 Date: 05/03/94

Title: (Letter forwarding the enclosed monthly report for April 1994 regarding the Renora Site remediation effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0504

Document Number: REN-003-0505 To 0506 Date: 04/01/94

Title: Renora Site Remediation, Monthly Report - April 1994

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0507 To 0507 Date: 04/01/94

Title: (Letter forwarding the enclosed monthly report for March 1994 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0508

Document Number: REN-003-0508 To 0509 Parent: REN-003-0507 Date: 03/01/94

Title: Renora Site Remediation, Monthly Report - March 1994

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0510 To 0510 Date: 03/08/94

Title: (Letter forwarding the enclosed monthly report for February 1994 and the enclosed annual report for the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: Harney, Joyce: US EPA
Attached: REN-003-0511 REN-003-0513

Document Number: REN-003-0511 To 0512 Parent: REN-003-0510 Date: 02/01/94

Title: Renora Site Remediation, Monthly Report - February 1994

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0513 To 0514 Parent: REN-003-0510 Date: 03/01/94

Title: Renora Site Remediation, Annual Report, March 1994, Remedial Action Progress Schedule

Type: REPORT
Author: none: Betz Converse Murdoch (BCM)
Recipient: none: none

Document Number: REN-003-0515 To 0515 Date: 02/01/94

Title: (Letter forwarding the enclosed monthly report for January 1994 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0516

Document Number: REN-003-0516 To 0517 Parent: REN-003-0515 Date: 01/01/94

Title: Renora Site Remediation, Monthly Report - January 1994

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0518 To 0518 Date: 01/10/94

Title: (Letter forwarding the enclosed monthly report for December 1993 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: Harney, Joyce: US EPA
Attached: REN-***-******

Document Number: REN-003-0519 To 0520 Date: 12/01/94

Title: Renora Site Remediation, Monthly Report - December 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0521 To 0521 Date: 01/10/94

Title: (Letter forwarding the enclosed monthly report for November 1993 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0522

Document Number: REN-003-0522 To 0523 Parent: REN-003-0521 Date: 11/01/93

Title: Renora Site Remediation, Monthly Report - November 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0524 To 0525 Date: 10/01/93

Title: Renora Site Remediation, Monthly Report - October 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0526 To 0526 Date: 10/01/93

Title: (Letter forwarding the enclosed monthly report for September 1993 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0527

Document Number: REN-003-0527 To 0528 Parent: REN-003-0526 Date: 09/01/93

Title: Renora Site Remediation, Monthly Report - September 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0529 To 0529 Date: 09/07/93

Title: (Letter forwarding the enclosed monthly report for August 1993 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0530

Document Number: REN-003-0530 To 0531 Parent: REN-003-0529 Date: 08/01/93

Title: Renora Site Remediation, Monthly Report - August 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0532 To 0532 Date: 08/09/93

Title: (Letter forwarding the enclosed monthly report for July 1993 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0533

Document Number: REN-003-0533 To 0534 Parent: REN-003-0532 Date: 07/01/93

Title: Renora Site Remediation, Monthly Report - July 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0535 To 0535 Date: 07/08/93

Title: (Letter forwarding the enclosed monthly report for June 1993 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney,Joyce: US EPA
Attached: REM-003-0536

Document Number: REN-003-0536 To 0537 Parent: REN-003-0535 Date: 06/01/93

Title: Renora Site Remediation, Monthly Report - June 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0538 To 0538 Date: 06/09/93

Title: (Letter forwarding the enclosed monthly report for May 1993 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0539

Document Number: REN-003-0539 To 0540 Parent: REN-003-0538 Date: 05/01/93

Title: Renora Site Remediation, Monthly Report - May 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0541 To 0541 Date: 05/07/93

Title: (Letter forwarding the enclosed monthly report for April 1993 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0542

Document Number: REN-003-0542 To 0543 Parent: REN-003-0541 Date: 04/01/93

Title: Renora Site Remediation, Monthly Report - April 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0544 To 0544 Date: 04/06/93

Title: (Letter forwarding the enclosed monthly report for March 1993 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0545

Document Number: REN-003-0545 To 0546 Parent: REN-003-0544 Date: 03/01/93

Title: Renora Site Remediation, Monthly Report - March 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0547 To 0547 Date: 03/04/93

Title: (Letter forwarding the enclosed monthly report for February 1993 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0548

Document Number: REN-003-0548 To 0549 Parent: REN-003-0547 Date: 02/01/93

Title: Renora Site Remediation, Monthly Report - February 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0550 To 0550 Date: 02/08/93

Title: (Letter forwarding the enclosed monthly report for January 1993 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0551

Document Number: REN-003-0551 To 0552 Parent: REN-003-0550 Date: 01/01/93

Title: Renora Site Remediation, Monthly Report - January 1993

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0553 To 0553 Date: 01/08/93

Title: (Letter forwarding the enclosed monthly report for December 1992 for the Renora Site remediation work effort)

Type: CORRESPODENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0554

Document Number: REN-003-0554 To 0555 Parent: REN-003-0553 Date: 12/01/92

Title: Renora Site Remediation, Monthly Report - December 1992

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0556 To 0556 Date: 12/08/92

Title: (Letter forwarding the enclosed monthly report for November 1992 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0557

Document Number: REN-003-0557 To 0558 Parent: REN-003-0556 Date: 11/01/92

Title: Renora Site Remediation, Monthly Report - November 1992

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: US EPA

Document Number: REN-003-0559 To 0559 Date: 11/09/92

Title: (Letter forwarding the enclosed monthly report for October 1992 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0560

Document Number: REN-003-0560 To 0561 Parent: REN-003-0559 Date: 10/01/92

Title: Renora Site Remediation, Monthly Report - October 1992

Type: REPORT
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0562 To 0562 Date: 10/07/92

Title: (Letter forwarding the enclosed monthly report for September 1992 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0563 REN-003-0565

Document Number: REN-003-0564 To 0564 Parent: REN-003-0562 Date: 09/01/92

Title: Renora Site Remediation, Monthly Report - September 1992

Type: REPORT
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0565 To 0565 Parent: REN-003-0562 Date: 10/01/92

Title: (Letter extending the deadline for submittal of draft Phase II Feasability Study Report to October 8, 1992)

Type: CORRESPONDENCE
Author: Harney, Joyce: US EPA
Recipient: deH. Alexander, Harry: Betz Converse Murdoch (BCM)

Document Number: REN-003-0566 To 0566 Date: 08/07/92

Title: (Letter forwarding the enclosed monthly report for July 1992 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0569

Document Number: REN-003-0567 To 0568 Parent: REN-003-0566 Date: 07/30/92

Title: Renora Site Remediation, Monthly Report - July 1992

Type: REPORT
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0569 To 0573 Parent: REN-003-0566 Date: 07/01/92

Title: Minutes - Renora Technical Committee Meeting

Type: OTHER
Author: none: none
Recipient: none: none

Document Number: REN-003-0574 To 0574 Date: 07/09/92

Title: (Letter forwarding the enclosed monthly report for June 1992 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0575

Document Number: REN-003-0575 To 0576 Parent: REN-003-0574 Date: 06/01/92

Title: Renora Site Remediation, Monthly Report for June - 1992

Type: REPORT
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0577 To 0577 Date: 06/05/92

Title: (Letter forwarding the enclosed monthly report for May 1992 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0578

Document Number: REN-003-0578 To 0579 Parent: REN-003-0577 Date: 05/01/92

Title: Renora Site Remediation, Monthly Report - May 1992

Type: REPORT
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0580 To 0580 Date: 05/06/92

Title: (Letter forwarding the enclosed monthly report for April 1992 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0581

Document Number: REN-003-0581 To 0582 Parent: REN-003-0580 Date: 04/01/92

Title: Renora Site Remediation, Monthly Report - April 1992

Type: REPORT
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0583 To 0583 Date: 04/07/92

Title: (Letter forwarding the enclosed monthly report for March 1992 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0584

Document Number: REN-003-0584 To 0585 Parent: REN-003-0583 Date: 03/01/92

Title: Renora Site Remediation, Monthly Report - March 1992

Type: REPORT
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0586 To 0586 Date: 03/09/92

Title: (Letter forwarding the enclosed monthly report for February 1992 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0587

Document Number: REN-003-0587 To 0588 Parent: REN-003-0586 Date: 02/01/92

Title: Renora Site Remediation, Monthly Report - February 1992

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0589 To 0589 Date: 02/07/92

Title: (Letter forwarding the enclosed monthly report for January 1992 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0590

Document Number: REN-003-0590 To 0592 Parent: REN-003-0589 Date: 01/01/92

Title: Renora Site Remediation, Monthly Report - April 1992

Type: REPORT
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0593 To 0593 Date: 01/06/92

Title: (Letter forwarding the enclosed monthly report for September 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0594

Document Number: REN-003-0594 To 0596 Parent: REN-003-0593 Date: 12/01/91

Title: Renora Site Remediation, Monthly Report - December 1991

Type: REPORT
Author: deH. Alexander, Harry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0597 To 0597 Date: 12/09/91

Title: (Letter forwarding the enclosed monthly report for November 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Guest, Daniel T.: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0598

Document Number: REN-003-0598 To 0600 Parent: REN-003-0597 Date: 11/01/91

Title: Renora Site Remediation, Monthly Report - November 1991

Type: REPORT
Author: Guest, Daniel T.: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0601 To 0601 Date: 11/07/91

Title: (Letter forwarding the enclosed monthly report for October 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0602

Document Number: REN-003-0602 To 0604 Parent: REN-003-0601 Date: 10/01/91

Title: Renora Site Remediation, Monthly Report - October 1991

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0605 To 0605 Date: 10/09/91

Title: (Letter forwarding the enclosed monthly report for September 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0606

Document Number: REN-003-0606 To 0608 Parent: REN-003-0605 Date: 09/01/91

Title: Renora Site Remediation, Monthly Report - September 1991

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0609 To 0609 Date: 09/09/91

Title: (Letter forwarding the enclosed monthly report for August 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0610

Document Number: REN-003-0610 To 0611 Parent: REN-003-0609 Date: 08/01/91

Title: Renora Site Remediation, Monthly Report - August 1991

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0612 To 0612 Date: 08/06/91

Title: (Letter forwarding the enclosed monthly report for July 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0613

Document Number: REN-003-0613 To 0614 Parent: REN-003-0612 Date: 07/01/91

Title: Renora Site Remediation, Monthly Report - July 1991

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0615 To 0615 Date: 07/08/91

Title: (Letter forwarding the enclosed monthly report for June 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0616

Document Number: REN-003-0616 To 0617 Parent: REN-003-0615 Date: 06/01/91

Title: Renora Site Remediation, Monthly Report - June 1991

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0618 To 0618 Date: 06/06/91

Title: (Letter forwarding the enclosed monthly report for May 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0619

Document Number: REN-003-0619 To 0620 Parent: REN-003-0618 Date: 05/01/91

Title: Renora Site Remediation, Monthly Report - July 1991

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0621 To 0621 Date: 05/07/91

Title: (Letter forwarding the enclosed monthly report for April 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0622

Document Number: REN-003-0622 To 0623 Parent: REN-003-0621 Date: 04/01/91

Title: Renora Site Remediation, Monthly Report - April 1991

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003- 0624 To 0624 Date: 04/05/91

Title: (Letter forwarding the enclosed monthly report for March 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0625

Document Number: REN-003-0625 To 0626 Parent: REN-003-0624 Date: 03/01/91

Title: Renora Site Remediation, Monthly Report - March 1991

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0627 To 0627 Date: 03/05/91

Title: (Letter forwarding the enclosed monthly report for February 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0628

Document Number: REN-003- 0628 To 0629 Parent: REN-003-0627 Date: 02/01/91

Title: Renora Site Remediation, Monthly Report - February 1991

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0630 To 0630 Date: 02/04/91

Title: (Letter forwarding the enclosed monthly report for January 1991 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0631

Document Number: REN-003-0631 To 0632 Parent: REN-003-0630 Date: 01/01/91

Title: Renora Site Remediation, Monthly Report - January 1991

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0633 To 0633 Date: 01/08/91

Title: (Letter forwarding the enclosed monthly report for December 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0634

Document Number: REN-003-0634 To 0635 Parent: REN-003-0633 Date: 12/01/90

Title: Renora Site Remediation, Monthly Report - December 1990

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0636 To 0636 Date: 12/07/90

Title: (Letter forwarding the enclosed monthly report for November 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0637

Document Number: REN-003-0637 To 0639 Parent: REN-003-0636 Date: 11/01/90

Title: Renora Site Remediation, Monthly Report - Novenber 1990

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0640 To 0640 Date: 11/08/90

Title: (Letter forwarding the enclosed monthly report for October 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0641

Document Number: REN-003-0641 To 0642 Parent: REN-003-0640 Date: 10/01/90

Title: Renora Site Remediation, Monthly Report - October 1990

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0643 To 0643 Date: 10/08/90

Title: (Letter forwarding the enclosed monthly report for September 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0644

Document Number: REN-003-0644 To 0645 Parent: REN-003-0643 Date: 09/01/90

Title: Renora Site Remediation, Monthly Report - September 1990

Type: REPORT
Author: Rochat-Helbig, Barbara: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0646 To 0646 Date: 09/07/90

Title: (Letter forwarding the enclosed monthly report for August 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0647

Document Number: REN-003-0647 To 0649 Parent: REN-003-0646 Date: 08/01/90

Title: Renora Site Remediation, Monthly Report - August 1990

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0650 To 0650 Date: 08/06/90

Title: (Letter forwarding the enclosed monthly report for July 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0651

Document Number: REN-003-0651 To 0652 Parent: REN-003-0650 Date: 07/01/90

Title: Renora Site Remediation, Monthly Report - July 1990

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0653 To 0653 Date: 07/06/90

Title: (Letter forwarding the enclosed monthly report for June 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0654

Document Number: REN-003-0654 to 0655 Parent: REN-003-0653 Date: 06/01/90

Title: Renora Site Remediation, Monthly Report - June 1990

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0656 To 0656 Date: 06/08/90

Title: (Letter forwarding the enclosed monthly report for May 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0657

Document Number: REN-003-0657 To 0659 Parent: REN-003-0656 Date: 05/01/90

Title: Renora Site Remediation, Monthly Report - May 1990

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0660 To 0660 Date: 05/07/90

Title: (Letter forwarding the enclosed monthly report for April 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0661

Document Number: REN-003-0661 To 0662 Parent: REN-003-0660 Date: 04/01/90

Title: Renora Site Remediation, Monthly Report - April 1990

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0663 To 0663 Date: 04/03/90

Title: (Letter forwarding the enclosed monthly report for March 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0664

Document Number: REN-003-0664 To 0665 Parent: REN-003-0663 Date: 03/01/90

Title: Renora Site Remediation, Monthly Report - March 1990

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0666 To 0666 Date: 03/07/90

Title: (Letter forwarding the enclosed monthly report for February 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0667

Document Number: REN-003-0667 To 0668 Parent: REN-003-0666 Date: 02/01/90

Title: Renora Site Remediation, Monthly Report - February 1990

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0669 To 0669 Date: 01/18/90

Title: (Letter forwarding copies of Sybron Chemical's completed draft treatability study report for the Renora site)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0670 To 0670 Date: 01/04/90

Title: (Letter forwarding the enclosed monthly report for January 1990 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0671

Document Number: REN-003-0671 To 0672 Parent: REN-003-0670 Date: 01/01/90

Title: Renora Site Remediation, Monthly Report - January 1990

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0673 To 0673 Date: 01/04/90

Title: (Letter forwarding the enclosed monthly report for December 1989 regarding the Renora Site remediation work effort)

Type: CORRESPONDENCE
Condition: MARGINALIA
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0674

Document Number: REN-003-0674 To 0675 Parent: REN-003-0673 Date: 12/01/89

Title: Renora Site Remediation, Monthly Report - December 1989

Type: REPORT
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: none: US EPA

Document Number: REN-003-0676 To 0678 Date: 05/31/94

Title: (Letter regarding the Renora Superfund Site, Edison Township, Middlesex County, Phase II Feasability Study dated May 1994)

Type: CORRESPONDENCE
Author: Purcell, Christina H.: New Jersey Department of Environmental Protection and Energy
Recipient: none: Harney, Joyce: US EPA
Attached: REN-003-0679

Document Number: REN-003-0679 To 0683 Parent: REN-003-0676 Date: / /

Title: Subchapter 9: Sealing of Abandoned Wells

Type: Other
Author: none: none
Recipient: none: none

Document Number: REN-003-0684 To 0684/A Date: 01/11/94

Title: (Letter stating that the New Jersey Department of Environmental Protection and Energy disagrees with the EPA's conclusion that a land use restriction would not be necessary to impose on the Renora Site after the removal action is conducted)

Type: CORRESPONDENCE
Author: Miller, Lance R.: New Jersey Department of Environmental Protection and Energy
Recipient: Pavlou, George: US EPA

Document Number: REN-003-0688 To 0690 Date: 03/04/93

Title: (Letter regarding the Renora Superfund Site, Edison Township, Middlesex County, Supplemental Phase II Feasability Study dated January 1993)

Type: CORRESPONDENCE
Author: Purcell, Christina H.: New Jersey Department of Environmental Protection and Energy
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0691 To 0698 Date: 11/16/92

Title: (Letter regarding Renora Inc., Edison Township, Middlesex County, Draft Risk Assessment II and Draft Feasability Study Report II)

Type: CORRESPONDENCE
Author: Purcell, Christina H.: New Jersey Department of Environmental Protection and Energy
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0699 To 0701 Date: 08/26/92

Title: (Letter regarding the Renora Site, Edison Township, Middlesex County, Report of Sampling Results)

Type: CORRESPONDENCE
Author: Purcell, Christina H.: New Jersey Department of Environmental Protection and Energy
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0702 To 0703 Date: 02/07/92

Title: (Letter commenting on the conference call of 2/7/92 regarding various wells at the Renora Site)

Type: CORRESPONDENCE
Author: Purcell, Christina H.: New Jersey Department of Environmental Protection and Energy
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0704 To 0704 Date: 10/23/91

Title: (Letter stating that MJEDEPE has reviewed the revised Sampling Plan, the Health and Saftey Plan, and the Quality Assurance Plan for the Renora Site incorporating all of MJDEPE's previous comments)

Type: CORRESPONDENCE
Author: Purcell, Christina H.: New Jersey Department of Environmental Protection and Energy
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0705 To 0705 Date: 05/17/91

Title: (Letter commenting on the preliminary Treatability Study for the Renora Site prepared by BCM Engineers dated March 1991)

Type: CORRESPONDENCE
Author: Luzecky, Roman S.: New Jersey Department of Environmental Protection
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0706 To 0707 Date: 05/16/91

Title: (Letter commenting on the Revised Sampling Plan (RSP), Quality Assurance Project Plan (QAPP), and the addendum to the Health and Safety Plan (HSP) for the Renora Site all dated 1991 prepared by BCM Engineers)

Type: CORRESPONDENCE
Author: Luzecky, Roman S.: New Jersey Department of Environmental Protection
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0708 To 0708 Date: 01/24/91

Title: (Letter stating that MJDEP recommends approval of the revised work plan for Phase II Feasability Study for the Renora Site prepared by dated 1990, and revised December 1990)

Type: CORRESPONDENCE
Author: Luzecky, Roman S.: New Jersey Department of Environmental Protection
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0709 To 0710 Date: 09/28/90

Title: (Letter commenting on the revised Sampling Plan for the preliminary stabilization/solidification treatability study at the Renora Inc. Site prepared by BCM Engineers dated July 1988 and revised September 1990)

Type: CORRESPONDENCE
Author: Luzecky, Roman S.: New Jersey Department of Environmental Protection
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0711 To 0711 Date: 09/14/90

Title: (Letter stating that MJDEP finds the use of a filter fence installed continuously along the Mill Brook acceptable provided that the filter fence and oleophillic polymer is installed deep enough to intercept oil seeping into the brook)

Type: CORRESPONDENCE
Author: Luzecky, Roman S.: New Jersey Department of Environmental Protection
Recipient: Harney, Joyce: US EPA
Attached: REN-003-0712

Document Number: REN-003-0712 To 0713 Parent: REN-003-0711 Date: 09/14/90

Title: (Fax copy of the letter in which MJDEP accepts the use of a installed continuously along the Mill Brook)

Type: CORRESPONDENCE
Author: Luzecky, Roman S.: New Jersey Department of Environmental Protection
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0714 To 0714 Date: 08/20/90

Title: (Letter stating that MJDEP has no comments on the bioremediation studies performed for the Renora Site, that bioremediation is unlikely to work on the contamination, and that the bioremediation studies are approved as submitted)

Type: CORRESPONDENCE
Author: Luzecky, Roman S.: New Jersey Department of Environmental Protection
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0715 To 0716 Date: 06/12/90

Title: (Latter commenting on the Draft Renora Site Remediation Sampling Plan prepared by BCM Engineers dated April 1990)

Type: CORRESPONDENCE
Author: Luzecky, Roman S.: New Jersey Department of Environmental Protection
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0717 To 0718 Date: 03/20/90

Title: (Letter regarding a site inspection conducted at the Renora Site by the MJDEP geologist on March 9, 1990)

Type: CORRESPONDENCE
Author: Luzecky, Roman S.: New Jersey Department of Environmental Protection
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0719 To 0720 Date: 03/04/90

Title: (Letter commenting on the draft workplan for the Focused Feasability Study for the Renora Inc. Site prepared by the BCM Engineers dated January 1990)

Type: CORRESPONDENCE
Author: Luzecky, Roman S.: New Jersey Department of Environmental Protection
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0721 To 0721 Date: 02/15/90

Title: (Letter stating MLDEP's approval of the Sampling and Analysis Results for the PCB excavation and off-site landfilling phase of the Renora Site remediation as approved as prepared by BCM Engineers dated January 15, 1990)

Type: CORRESPONDENCE
Author: Luzecky, Roman S.: New Jersey Department of Environmental Protection
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0722 To 0746 Date: 08/22/90

Title: Administrative Order, Index No. II-CERCLA-00111, in the Matter of: Renora, Inc. Site, Edison, New Jersey

Type: LEGAL DOCUMENT
Author: Sidamon-Eristoff, Constan: US EPA
Recipient: various: various PRPs

Document Number: REN-003-0747 To 0747 Date: 03/12/91

Title: (Letter submitting the enclosed Order Modifying the Consent Decree in the USA v. Alcan Aluminum Corp., Civil Action No. 88-4646; and State of New Jersey v. Alcan Aluminum Corp., Civil Action No. 88-4670)

Type: CORRESPONDENCE
Author: Brooks-Davidson, Carrick: US Dept of Justice
Recipient: Clark: US District Court
Attached: REN-003-0748

Document Number: REN-003-0748 To 0760 Parent: REN-003-0747 Date: 03/21/89

Title: United States of America v. Alcan Aluminum Corp. et. al., Civil Action No. 88-4670, Hon. Nicholas H. Politan; State of New Jersey v. Alcan Alunium Corp. et. al., Civil Action No. 88-4670, Hon. Nicholas H. Politan

Type: LEGAL DOCUMENT
Author: Brook-Davidson, Carrick: US Dept of Justice
Engel, Richard F.: Deputy Attorney General, State of New Jersey
Tucker, William C.: Assistant Regional Counsel, EPA
Recipient: Hyatt, William H.: Pitney, Hardin, Kipp & Szuch
Worton, Kenneth H.: New Jersey Transit Bus Operations, Inc.

Document Number: REN-003-0761 To 0764 Date: 08/19/92

Title: (Letter registering the Renora Trust's objection to the decision by the U.S. EPA to require the Trust to prepare the supplemental feasability study for the Renora Site prior to completion by the EPA of the risk assessment)

Type: CORRESPONDENCE
Author: deH. Alexander, Henry: Betz Converse Murdoch (BCM)
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0765 To 0766 Date: 09/26/91

Title: (Letter invoking dispute resolution regarding the civil Action No. 88-4646 (NHP), Consent Decree entered March 21, 1989)

Type: CORRESPONDENCE
Author: Hyatt, William H.: Pitney, Hardin, Kipp & Szuch
Recipient: various: various

Document Number: REN-003-0767 To 0769 Date: 10/16/90

Title: (Letter designating Daniel T. Guest, P.E. as the facility Coordinator pursuant to Section VII(A) of the Renora, Inc. Superfund Site Administrative Order Index -II-CERCLA-00111)

Type: CORRESPONDENCE
Author: Hyatt, William H.: Pitney, Hardin, Kipp & Szuch
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0770 To 0775 Date: 05/18/90

Title: (Letter suggesting alternate approaches to the performance of the Phase II Feasability Study or the remediation of the Renora Site, and providing comments on the draft Admistrative Order on Consent received April 25, 1990)

Type: CORRESPONDENCE
Author: Hyatt, William H.: Pitney, Hardin, Kipp & Szuch
Recipient: Tucker, William, Esq.: US EPA

Document Number: REN-003-0776 To 0776 Date: 03/11/92

Title: (Letter thanking Ms. Harney for being sensitive to the concern of the community surrounding the Renora Site)

Type: CORRESPONDENCE
Author: Grun, John O.: Edison NJ, Town of
Recipient: Harney, Joyce: US EPA

Document Number: REN-003-0777 To 0788 Date: 06/01/94

Title: Proposed Plan for Renora Inc. Site

Type: PLAN
Author: none: US EPA
Recipient: none: none

Document Number: REN-003-0789 To 0789 Date: 11/01/90

Title: (Letter rescinding the Unilateral Order entered August 22, 1990)

Type: CORRESPONDENCE
Author: none: US EPA
Recipient: Hyatt, William H.: Pitney, Hardin, Kipp & Szuch

APPENDIX III

ADMINISTRATIVE RECORD INDEX

APPENDIX IV

RESPONSIVENESS SUMMARY

RENORA, INC. SUPERFUND SITE

INTRODUCTION

A responsiveness summary is required by Superfund policy. It provides a summary of the public's comments (received during the public comment period and at the public meeting) and the United States Environmental Protection Agency's (EPA's) response to these concerns. All comments summarized in this document have been considered in EPA's final selection of a remedy for the Renora site.

This community relations responsiveness summary is divided into the following sections:

I. Overview: This section describes EPA's preferred alternative for remedial action.

II. Summary of Community Relations Activities: This section describes community relations activities related to the Renora site.

III. Public Meeting Comments and EPA Responses: This section provides a summary of commentors' major issues and concerns, and responds to all significant comments raised at the public meeting.

IV. Response to Written Comments: This section provides a summary of, and responses to, written comments received during the public comment period.

I. OVERVIEW

The selected remedy for the site includes excavation of the top two feet of soil and off-site disposal at an EPA approved landfill, and backfilling of the site with certified clean fill.

EPA did not receive any public comments that indicate that changes to the selected remedial alternative are appropriate.

II. SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The Phase II Feasibility Study (FS) report, and the Proposed Plan for the site were released for public comment on July 20, 1994. These documents are available to the public in the administrative record file at the EPA Docket Room in Region II, New York and the information repository at the Edison Township Public Library located on Plainfield Avenue in Edison Township, New Jersey. The notice of availability for these documents was published in the News Tribune on July 20, 1994. The public comment period was held from July 20, 1994 to August 18, 1994.

On August 9, 1994, EPA conducted a public meeting at the Edison Township Municipal Building to, 1) inform local officials and interested citizens about the Superfund process, 2) review current and planned remedial activities at the site, and 3) respond to any questions from area residents and other attendees.

Community involvement with Renora site activities has been somewhat limited. EPA distributed the Proposed Plan for the Renora site to more than 350 area residents; however, attendance at the public meeting was limited. The majority of the comments received from the local community involved risk-related issues.

III. PUBLIC MEETING COMMENTS AND EPA RESPONSES

The questions and comments raised during the public meeting are grouped into the following categories:

A. Remediation of Subsurface Soils

B. Remediation of Ground Water

C. Remediation of Mill Brook Surface Water and Sediments

D. Risk Issues

E. Administrative Record Documents

F. Replacement of the Perimeter Fence

G. Environmental Land-Use Restriction

H. Disposal of Excavated Soil

Each question or comment is followed by EPA's response, as required.

A. Remediation of Subsurface Soils

1. A representative of Congressman Pallone's office stated that the Congressman believes it is critical for EPA to address the subsurface arsenic contamination and requested an explanation as to why remediation of the subsurface soils is not part of EPA's cleanup plan.

EPA Response: EPA's Risk Assessment evaluated the potential carcinogenic and non-carcinogenic risk of exposure to subsurface soils using a future-excavation worker scenario. The potential risks were assessed using the reasonable maximum exposure (i.e., the "worst case" exposure scenario) which assumes that an excavation worker would be exposed to the maximum concentration of contaminants at the site for 65 days and would ingest 480 milligrams per day (mg/day) of the soil containing the maximum concentration.

The results of the risk assessment revealed that even though reasonable maximum exposure values were used, the potential carcinogenic risk of exposure to subsurface soils is well within EPA's acceptable risk range. The calculated risk to an excavation worker was 2 x 10-5, or two in one hundred thousand, while EPA's acceptable risk range is one in ten thousand to one in a million.

The potential non-carcinogenic risk of exposure to subsurface soils was determined to be greater than EPA's acceptable risk level. A hazard index of 10 was calculated compared to EPA's acceptable level of 1.0. This indicates that there may be a concern for chronic health effects. However, because this risk is solely due to the presence of elevated concentrations of arsenic in subsurface soils, in particular, the maximum concentration that was detected in only one sample (taken from eight to ten feet below the surface), EPA concluded it was necessary to examine the assumptions utilized in the risk assessment.

Use of the reasonable maximum exposure (ingestion of 480 mg/day of the maximum concentration of arsenic for 65 days) is extremely conservative and may overestimate the potential non-carcinogenic risk of exposure to the subsurface soils. The ingestion rate of 480 mg/day is based on gardening activities (contact with soil using hand tools); however, an excavation worker is more likely to use heavy machinery which would result in a maximum soil ingestion rate of 50 mg/day. In addition, the 65 days of excavation activities would not be limited to the one area -- eight to ten feet below the surface -- where the maximum concentration of arsenic was detected. The excavation worker would reasonably be exposed to subsurface soils over the entire site, resulting in exposure to an average (rather than maximum) concentration of arsenic during the 65 days of excavation activities. Therefore, EPA also evaluated the risk based on a "central tendency", using the average risk parameters noted above. The use of these central tendency values results in a decrease of the hazard index to 0.2, indicating that adverse non-carcinogenic effects are unlikely to occur.

In addition, risk also depends on a chemical's toxicity factor. The potential non-carcinogenic risk of exposure to subsurface soils was generated by comparing the chronic daily intake to the reference dose, which is a measure of arsenic's threshold for causing chronic adverse health effects. Since the daily exposure dose in the excavation- worker scenario, which is of sub-chronic duration (two to seven years), is being compared to a threshold dose (RfD) based on a chronic exposure (greater than seven years), the potential risk of the sub-chronic exposure (65 days) would be considerably lower.

Finally, it should be recognized that since the maximum concentration of arsenic was detected at eight to ten feet below the surface, it is unlikely that anyone will come in contact with it. However, even if casual contact with these soils were to occur, the maximum concentration of arsenic detected in the subsurface soils is not high enough to cause acute health effects, and therefore, does not represent an imminent and substantial health threat.

Therefore, since the subsurface soils do not pose an unacceptable carcinogenic or non-carcinogenic risk (based on the analyses, above), EPA has determined that remediation of the subsurface soils is not required.

2. A representative of the Edison Wetlands Association suggested that the reason EPA is not addressing the subsurface soil contamination is to save the potentially responsible parties' (PRPs) money. In addition, he stated that because a land-use restriction would be required, the site's future use would be limited.

EPA Response: EPA selected the preferred alternative based on an evaluation of four alternatives with respect to the following nine evaluation criteria:

- Overall Protection of Human Health and the Environment
- Compliance with Applicable or Relevant and Appropriate Requirements
- Long-Term Effectiveness
- Reduction of Toxicity, Mobility or Volume through Treatment
- Short-Term Effectiveness
- Implementability
- Cost
- State Acceptance
- Community Acceptance

As required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), EPA uses the above criteria to select remedies at all Superfund sites –- regardless of who is paying for remediation of the site. EPA selected the preferred remedy because it provides the best balance of the nine evaluation criteria -- not to reduce remediation costs for the PRPs.

In addition, as stated above, EPA determined that remediation of subsurface soils was not necessary based on an assessment of the risk and likelihood of exposure to subsurface soils. As explained, the risks associated with the subsurface soils are within EPA's acceptable risk range.

EPA agrees that a land-use restriction would limit development of the site. However, the restriction would only apply to subsurface soils. Because the water table is rather shallow (five feet below the surface) in some areas of the site, excavation activities would likely be confined above the water table. Therefore, a restriction on use of the deep soils at the site is not expected to significantly hinder future development or use of the site. EPA believes that removal of the top two feet of soil and replacement with clean fill would provide additional flexibility for future development.

B. Remediation of Ground Water

1. A representative of Congressman Pallone's office stated that the Congressman believes that EPA should include ground water as part of its final cleanup action at the Renora site since the potential risk posed by ingestion of unfiltered ground water at the site exceeds EPA's acceptable risk range. A member of the township council also expressed concern about the risk due to ground water.

EPA Response: Although EPA conservatively evaluated the risk of exposure to shallow ground water underlying the site, it is not considered a complete pathway of exposure. EPA determined that the shallow ground water flows in a horizontal direction and discharges into Mill Brook. Due to the low permeability of the shallow aquifer, which impedes downward flow of contaminants, it is reasonable to assume that only the shallow aquifer has been impacted. Since all potable wells in the vicinity of the site are cased in the deep aquifer (greater than 100 feet), it is unlikely that a well would be installed in the shallow aquifer. However, if a well were installed in the shallow aquifer, its poor productivity would result in low yielding wells that would not support a potable water supply. In addition, most Edison Township residents depend on public water for their public water supply.

Nonetheless, EPA did quantitatively assess the risk due to exposure to site ground water in its risk assessment. Results of the risk assessment revealed that the potential cancer risk associated with ingestion of unfiltered shallow ground water exceeds EPA's acceptable risk range. Because the unfiltered ground water contains a high percentage of sediments, EPA considers ingestion of the unfiltered ground water to be the worst-case scenario. If shallow ground water underlying the site were to be used as potable water, it would require a filtering system to remove the solids. Therefore, EPA believes that the concentrations of contaminants in the filtered ground water are more representative of the concentrations that would be ingested. EPA's assessment of the potential carcinogenic risk associated with ingestion of filtered ground water risk shows it to fall within EPA's acceptable risk range.

Based on the risk assessment, site conditions and ground water usage in the vicinity of the site, EPA concluded that exposure to the contaminated ground water underlying the site is highly unlikely, and that remediation of the shallow ground water is not required.

2. The Director of Health and Human Resources in Edison Township stated that the township will not allow ground water wells to be installed on or near the site without permission from the state and the township.

EPA Response: EPA appreciates the township's efforts to limit installation of new wells in the vicinity of the site, and is willing to provide the township with any ground water quality information which may be of assistance.

C. Remediation of Mill Brook Surface Water and Sediments

1. A representative of the Edison Wetlands Association stated that EPA's preferred remedy would not achieve one of the remedial objectives for the site (preventing further contamination of Mill Brook) since, 1) the contaminated ground water will not be remediated, and 2) the contaminated ground water will continue to discharge into Mill Brook after remediation of the surface soils is completed.

EPA Response: EPA disagrees. EPA sampled Mill Brook surface water and sediments upstream from the site, adjacent to the site, and downstream from the site, to determine if the site is a significant source of contamination. The results showed that polycyclic aromatic hydrocarbons (PAHs) are the only contaminants detected at higher concentrations downstream from and adjacent to the site. Since the highest levels of PAHs are found in the surface soils, contamination of Mill brook is most likely occurring through surface runoff. Therefore, removal of the contaminated surface soils and replacement with clean fill should prevent further contamination of Mill Brook.

The shallow ground water will continue to discharge into Mill Brook. However, EPA determined that the shallow ground water is not contributing significant contamination to Mill Brook because contaminants found in the ground water were detected in Mill Brook at similar concentrations upstream from, adjacent to, and downstream from the site. In addition, the results of EPA's risk assessment indicated that exposure to Mill

Brook surface water and sediments does not pose an unacceptable risk to human health and the environment.

D. Risk Issues: General

1. A representative of the Edison Wetlands Association stated that EPA's risk assessment process is not based on scientific principles, and that there are many sources of uncertainty in the risk assessment. He further stated that because 1) risk models are based on studies performed with rats and 2) the effects of exposure to multiple contaminants are not considered, the risk assessment may underestimate risk to human health.

EPA Response: Risk assessment is an evolving science that EPA is constantly striving to improve. The foundation of risk assessment is based on scientific principles, however, existing data gaps may result in some degree of uncertainty. Some examples of these data gaps include the qualification and quantification of analytical data, extrapolation of dose-response relationships from animals to humans, and measures of exposure (i.e., ingestion rate and duration of exposure).

To account for possible uncertainties in assessing risk, EPA uses very conservative assumptions including reasonable maximum exposure (the maximum exposure reasonably expected to occur) for contaminant concentrations and exposure frequency. In addition, EPA uses reference doses (the threshold for causing adverse health effects) which incorporate safety factors to account for extrapolation of animal studies to humans. For example, EPA may add a safety factor of up to 10,000 to a dose that causes adverse effects in rats to estimate the dose that will cause similar effects in humans.

EPA's risk assessment process also includes an evaluation of the additive effect of all contaminants of concern found at a site for each pathway of exposure (i.e., the risk associated with exposure to each contaminant is summed to determined the total risk of exposure).

2. The president of the Association at Edison Glen Condominiums asked if the Renora site contamination posed a risk to the residents of Edison Glen. In addition, she asked if additional sampling of the Edison Glen property should be conducted.

EPA Response: EPA has determined that the contamination found at the Renora site does not pose a risk to the residents of Edison Glen.

Due to concern about possible arsenic contamination in the surface soils at the Edison Glen condominium complex, EPA conducted sampling of the surface soils on the Edison Glen property. The results indicated that, with the exception of one area (which EPA will be remediating), the concentration of arsenic is below 20 parts per million, which is consistent with background levels in the State of New Jersey.

E. Administrative Record Documents

1. The Director of Health and Human Resources in Edison Township asked if the letter he sent to EPA during the public comment period would be part of the official record.

EPA Response: The letter will be included in Attachment A of the Responsiveness Summary, which will be incorporated into EPA's Administrative Record. The Administrative Record for the site may be viewed in the Edison Township Public Library located on Plainfield Avenue, or EPA's Superfund Document Center located in EPA's Region II Office in New York City.

F. Replacement of Perimeter Fence

1. The Director of Health and Human Resources in Edison Township stated that he wants the perimeter fence to be reinstalled after the remediation is complete to prevent unauthorized use of the site.

EPA Response: Unlike Alternatives 2 and 3 which depend on maintenance of the site fence for long term effectiveness, the selected remedy does not require maintenance of the fence to ensure protectiveness. Since

all contamination of concern will be removed from the site, EPA does not believe that the remedy must include long term maintenance of the fence. However, EPA acknowledges the concern about unauthorized site use. EPA does not anticipate that the existing fence will need to be removed during excavation and backfilling activities. However, if sections do need to be removed, EPA will request that the contractor reinstall the existing fence.

G. Environmental Land-Use Restriction

1. A representative of the New Jersey Department of Environmental Protection (NJDEP) stated that the State of New Jersey agrees with EPA's preferred remedial alternative. However, because the contamination remaining on the site (after remediation) poses a risk greater than one in a million, NJDEP requires an environmental land-use restriction for the site. In addition, he stated that the NJDEP and EPA will try to resolve this issue before EPA signs the Record of Decision.

EPA Response: EPA acknowledges NJDEP's position relative to the need for a land-use restriction, and explained that the two agencies would work together to address this concern.

H. Disposal of Excavated Soil

1. A resident of Edison Township asked where the excavated soils would be disposed, and if treatment would be required prior to disposal.

EPA Response: EPA has not yet determined where the excavated surface soil will be disposed. Tests will be performed to determine if the surface soil is a hazardous waste and if treatment will be required prior to disposal. If the test results indicate that the surface soil requires treatment, it is likely that the receiving facility will select the method of treatment at that time.

IV. RESPONSE TO WRITTEN COMMENTS

During the public comment period, EPA received correspondence from the following:

- William Hyatt, Esq., of Pitney, Hardin, Kipp & Szuch, on behalf of a group of the PRPs
- John O. Grunn, M.S., Director of Health and Human Resources, Edison Township Department of Health

Written questions and comments received during the public comment period are grouped into the following categories:

A. Remediation of Subsurface Soils

B. Remediation of Ground Water

C. Remediation of Mill Brook Surface Water and Sediments

D. Remediation of Surface Soils and EPA's Risk Assessment Process

E. Environmental Land-Use Restriction

F. Replacement of the Perimeter Fence

G. Future Site Use

H. Miscellaneous

Each question or comment is followed by EPA's response, as necessary.

A. Remediation of Subsurface Soils

1. A representative of a group of PRPs commented that the PRPs agree with EPA's conclusion that subsurface soils at the site do not pose an unacceptable risk to human health and, further, that the risk due to exposure to subsurface soils under a future excavation-worker scenario was calculated utilizing overly conservative assumptions. The representative of the PRPs stated that the PRPs support EPA's selection of a remedy that does not require remediation of subsurface soils.

EPA Response: EPA agrees.

B. Remediation of Ground Water

1. A representative of a group of the PRPs commented that the PRPs agree with EPA's conclusion that exposure to contaminated ground water at the site is highly unlikely and supports EPA's selection of a remedy that does not require remediation of the ground water.

EPA Response: EPA agrees.

2. An Edison Township health official commented that ground water contamination at the site is of no concern because no one presently uses, or is expected to use the shallow ground water as a potable water supply. In addition, his letter stated that Edison Township planned to maintain internal institutional controls to ensure that no potable wells are installed on or near the site in the future.

EPA Response: EPA agrees.

C. Remediation of Mill Brook Surface Water and Sediments

1. A representative of a group of the PPs commented that the PRPs agree with EPA's conclusion that exposure to Mill Brook surface water and sediments does not pose a risk to human health or the environment and supports EPA's selection of a remedy that does not require remediation of the surface water and sediments.

EPA Response: EPA agrees.

D. Remediation of Surface Soils

1. A representative of a group of the PRPs commented that the PRPs do not agree that the surface soils warrant remediation. The commentor states that because the risk posed by surface soils is within EPA's acceptable risk range, and in accordance with the NCP Section 300.430(e) and OSWER Directive 9355.0-30, Role of Baseline Risk Assessment in Superfund Remedy Selection, remedial action is not warranted. In addition, he states that EPA's site-specific remedial objective for surface soil is unsupported by the risk assessment and that there is no reasonable basis for EPA to require remediation of surface soils.

EPA Response: EPA's Risk Assessment Report (TRC, May 1983), evaluated the potential risk of exposure to contaminated surface soils under an adjacent-resident, future-use scenario. The risk was determined to be 8 x 10-5, which is within the range where EPA has the discretion to take remedial action. According to OSWER Directive 9355.0-30, Role of Baseline Risk Assessment in Superfund Remedy Selection (April 22, 1991), "EPA may determine that risks below 1 x 10-4 are not sufficiently protective, and therefore, warrant remedial action."

In addition, future use of the site is a significant factor. As the site is currently zoned for light-industrial use, it will at least be used for commercial purposes. However, based on the proximity to residential properties, the site may be developed for recreational use for area residents, which would likely result in frequent exposure to the most sensitive human receptors -- children. Such exposure to children might occur at a greater frequency and duration than that estimated under the "adjacent resident" scenario evaluated in the risk assessment, and therefore, could result in a higher carcinogenic risk. In addition, EPA estimated the risk posed by direct contact with surface soils under a residential scenario to be 2.2 x 10-4, which is at the upper bounds of EPA's acceptable risk range. Therefore, EPA has determined that

remediation of the surface soils is required to prevent contact with contaminated surface soils and protect human health.

The NCP, Section 300.430(e), requires EPA to establish remedial action objectives, which are specific goals to protect human health and the environment, for every site. In accordance with the NCP, EPA has determined that the remedial action objective for the site is to prevent direct contact with, and ingestion of contaminated surface soil.

2. An Edison Township health official commented that he agrees that the PAH-contaminated surface soils pose an unacceptable risk to residents that may come in contact with the soils, and thus, agrees with EPA's decision to remediate the surface soils.

EPA Response: EPA agrees.

E. Environmental Land-Use Restriction

1. A representative of a group of the PRPs commented that the PRPs object to EPA's rejection of a use restriction as remedial technology for soil. The commentor further requested that EPA consider a detailed analysis of a remedy consisting of a capping technology in conjunction with access restrictions and a land-use restriction to prevent future excavation of (and exposure to) subsurface soils.

EPA Response: EPA has rejected land-use restrictions for the site as the sole remedy, and believes that including such restrictions as part of the capping alternatives would not significantly impact the results of the detailed analyses of the remedial alternatives.

Section 300.430 (a)(1)(iii)(D) of the NCP states that institutional controls (including access and land-use restrictions) should not be relied upon as the sole remedy: "The use of institutional controls shall not substitute for active response measure (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during selection of the remedy." EPA has determined that active response measures are practicable for this site. Therefore, a land-use restriction would not be appropriate as a stand-alone remedial alternative.

EPA has evaluated the inclusion of a land-use restriction under the two capping alternatives (Alternatives 2 and 3). Based on this evaluation, EPA has determined that including a land-use restriction with Alternatives 2 and 3 to prevent excavation of subsurface soils would not enhance the overall protectiveness of human health and the environment or the long-term effectiveness of Alternatives 2 and 3 when compared to the selected remedy (Alternative 4). Since the primary risk associated with the site is direct contact with contaminated surface soils, Alternative 4 remains the most protective, as it completely eliminates the potential for exposure to these surface soils. Because the contaminated surface soils would remain on the site under Alternative 2 and 3, protectiveness would only be assured if the cap was properly maintained. The addition of a land-use restriction to prevent excavation of subsurface soils would not increase the protectiveness of Alternatives 2 and 3, since the potential for exposure to contaminated surface soils due to possible breaches in the cap would still exist.

In addition, even with the inclusion of a land-use restriction, both Alternatives 2 and 3 would still rely heavily on long term maintenance and monitoring activities, as opposed to the Alternative 4, which does not require maintenance to be effective over the long term.

Section 121 of CERCLA requires that EPA select remedies which utilize "permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable." Alternative 4 is the most permanent solution as it involves complete removal of the contamination of concern, and as stated above, does not rely on long-term maintenance. Including a land-use restriction as a component of Alternative 2 and 3 would not enhance their permanence at all -- both alternatives would still rely on long-term containment as the primary technology to address site contamination.

As noted in EPA's Proposed Plan, Alternative 4 also provides a greater degree of flexibility for future use

of the site. Because Alternatives 2 and 3 depend on maintenance of the cap to be protective, future use of the site would likely be limited. The addition of a land-use restriction would not affect this dependence on maintenance; therefore, Alternative 4 would still be most likely to accommodate future use of the site.

Consequently, EPA has concluded that even if a land-use restriction were included under Alternatives 2 and 3, Alternative 4 would be the most protective of human health and the environment and would provide the greatest degree of long term effectiveness and permanence.

2. An Edison Township health official commented that subsurface soil contamination is not likely to pose a risk unless disturbed, and recommended that a deed restriction be placed on the site. His letter stated that he is aware that neither EPA nor NJDEP has the authority to impose land-use restrictions at this time, but recommended that EPA work towards a way to impose such restrictions. In addition, his letter stated that Edison Township Department of Health and Human Resources would advise local land-use regulators of site conditions to the best of their ability.

EPA Response: EPA will work with NJDEP, the site owner, and responsible parties to address this concern.

F. Replacement of the Perimeter Fence

1. A representative of a group of the PRPs commented that EPA has no basis for requiring the replacement of the perimeter fence under Alternative 4 as this alternative involves the removal of contaminated surface soil and replacement with clean fill. The commentor states that the PRPs object to EPA's explanation that the replacement of the fence will prevent unauthorized use of the site by the site owner. Rather, the PRPs believe that this requirement only serves EPA's interest in avoiding potential administrative inconveniences.

EPA Response: Since all contamination of concern will be removed from the site, EPA does not believe that the selected remedy must include long-term maintenance of the fence. Although EPA does not anticipate that the existing fence will need to be removed during excavation and backfilling activities, if sections do need to be removed, EPA will request that the contractor reinstall the existing fence, based on concern expressed by local officials.

G. Future Site Use

1. A representative of a group of the PRPs commented that Alternative 2 is more likely to conform to future use because the site is zoned for light-industrial use and future residential use is unlikely.

EPA Response: EPA disagrees that Alternative 2 is more likely to conform to future use. Under Alternative 2, the cap and the perimeter fence must be maintained –- essentially forever -- in order to ensure its protectiveness by preventing exposure to contaminated surface soils. Due to the requirement for long term maintenance of the site cap, which includes periodic repairs and replacement, it is unlikely that the site would conform to any future use at all, including a light-industrial or commercial use.

M. Miscellaneous

1. A representative of a group of the PRPs commented that the first sentence of Section 1.9.2.5 of the Phase II FS report should be deleted and replaced with wording to clarify that the findings of both the Remedial Investigation (RI) and Phase II FS field investigation indicate that the site has not contributed volatile organic compounds (VOCs) or semi- volatile organic compounds (SVOCs) to the surface waters of Mill Brook.

EPA Response: The first sentence of Section 1.9.2.5 of the Phase II FS report has been revised to read: "No VOCs or SVOCs were detected in Mill Brook surface waters." But, because VOCs and SVOCs were detected during the RI, EPA cannot state that the Renora site has not contributed VOC and SVOC contamination to Mill Brook.

APPENDIX V

CORRESPONDENCE RECEIVED DURING THE PUBLIC COMMENT PERIOD

PITNEY, HARDIN, KIPP & SZUCH
(MAIL TO)
P.O. BOX 1945
MORRISTOWN, NEW JERSEY 07962-1945

(DELIVERY TO)

WILLIAM H. HYATT, JR. 200 CAMPUS DRIVE TELEX 642014

FLORHAM PARK, NEW JERSEY 07932-0950 FASCIMILE (201) 966-1550

DIRECT DIAL NUMBER
(201) 966-8041

FLORHAM PARK (201) 966-6300

NEW YORK (212) 926-0331

AUGUST 15, 1994

VIA CERTIFIED MAIL, RETURN RECEIPT REQUESTED

Joyce Harney
USEPA Region II
26 Federal Plaza - Room 747
New York, NY 10278
Renora Public Comments

Re: Renora Superfund Site, Edison, New Jersey

Dear Ms. Harney:

On behalf of the Renora RD/RA Trust, enclosed are comments on the final Phase II Feasibility Study ("FSII") and the Proposed Plan for the Renora Site. Also included are the Trust's responses to Raymond Basso's July 18, 1994, letter to Henry Alexander of BCM Engineers, Inc.

1. The Renora RD/RA Trust supports EPA's conclusion that subsurface soils do not pose an unacceptable risk. In calculating a non-carcinogenic hazard index of 10, and a carcinogenic risk of 2 x 10-5, from direct exposure to subsurface arsenic, the Risk Assessment report prepared by TRC Environmental Corporation in May 1993 used overly conservative exposure factors. First, the risk assessment used the maximum arsenic concentration of 721 ppm, detected in one sample 8-10 feet below the surface, instead of the average concentration of 71 ppm calculated from the ten subsurface samples analyzed. Second, the risk assessment assumed that an excavation worker would be exposed to the maximum concentration of 721 ppm for five days per week for three months, for a total of 65 days. This duration is highly unlikely for any excavation project at the one-acre Renora Site, particularly for a single worker. Third, the risk assessment assumes a soil ingestion rate of 480 mg/day, which does not account for the use of heavy equipment or personal protective equipment during the course of the excavation. In other words, the risk presented by subsurface soil is based on a single individual working five days per week for thirteen weeks in direct contact with the maximum arsenic concentration measured at the Site, without even a dust mask on. This "scenario is unrealistic and, therefore, EPA was correct to "select a remedy that does not address subsurface soil.

2. The Renora RD/RA Trust supports EPA's conclusion that shallow groundwater at the site is unlikely to be used for human consumption and therefore does not require remediation. As noted by EPA, the highest rik levels associated with shallow groundwater result from arsenic levels in unfiltered samples, which are not representative of potential drinking water. Furthermore, as noted by EPA, local residents are connected to the municipal water supply. There are no potable wells drawing water from the shallow aquifer near the site, and no potable wells will be installed given the poor productivity of the shallow aquifer. Finally, the shallow aquifer is not connected to and does not recharge the deeper aquifers in the area, nor does it have an effect on Mill Brook. Thus, there are no pathways of exposure to shallow groundwater and EPA was correct to select a remedy that does not require groundwater remediation.

3. The Renora RD/RA Trust supports EPA's conclusion that surface water and sediment do not require remediation. As shown by samples collected at and adjacent to the site, concentrations of compounds in surface water are within applicable limits or are at background levels, indicating that the site is not contributing contamination to surface water. Similarly, in sediment, the concentration of all compounds, with the exception of PAHs, are essentially at background levels, and the Risk Assessment shows that the PAHs in sediment do not present a significant risk under conservative exposure scenarios. EPA's decision not to remediate surface water and sediment is sound.

4. The Renora RD/RA Trust disagrees that surface soil warrants remediation. Based on the TRC Risk Assessment Report for the Renora Site (May 1993), the FSII Report states that the carcinogenic risk posed by contaminated surface soil on the site is "within EPA's acceptable risk range." FSII Report § 1.11; Proposed Plan p.5. Therefore, in accordance with the NCP section 300.430(e) and OSWER Directive 9255.0-30, Role of Baseline Risk Assessment in Superfund Remedy Selection Decisions (April 22, 1991), remedial action is not warranted. EPA's site-specific remedial objective for surface soil is therefore unsupported by the Risk Assessment.

Furthermore, it should be noted that contrary to Mr. Basso's July 18 letter, the TRC Risk Assessment Report already considered land use in the vicinity of the Renora Site in calculating the risk posed by surface soils. For surface soil exposure to youth trespassers, TRC assumed trespassing activity "was to occur over a period of 10 years" and that "exposure to contaminated surface soils and sediments was assumed to occur frequently, especially during summer months (total of 117 days per year.) Dermal contact scenarios assumed exposed areas of arms, hands, and legs." TRC Risk Assessment Report, p.4-14. For surface soil exposure to adjacent residents in the future, TRC assumed residents would "be exposed to site soils, sediments, and surface water for a total period of 30 years, 6 years as a child and 24 years as an adult (EPA, 1991a). Children were assumed to frequent the site 143 days per year while adults visited 78 days per year." TRC Risk Assessment Report, p.4-14. Thus, using EPA's own exposure models, TRC considered land use in the vicinity of the site in calculating the potential risk posed by surface soils. That risk is within EPA's acceptable risk range, and therefore there is no reasonable basis for EPA to require remediation of surface soils.

5. The Renora RD/RA Trust objects to EPA's rejection of a use restriction as a remedial technology for soil. FSII Report § 2.2.4.2. The site owners have informed the Trust they would be willing, under certain circumstances, to allow a use restriction to be placed upon their title to the site, and the Trust conveyed this information to EPA during a December 10, 1993, telephone conference call and in a May 20, 1994, letter to EPA. This technology therefore cannot be considered "not implementable, n and should be retained for integration into remedial alternatives developed by the FSII Report.

Although neither EPA nor the State have unilateral authority to obtain a land use restriction, as Mr. Basso pointed out in his July 18 letter, both EPA and the State have authority to issue such orders as may be necessary to protect public health. See e.g., CERCLA § 106(a); New Jersey Spill Act § 58:10-23.11f(a)(1). Both the FSII and the Proposed Plan fail to consider remedial alternatives in which EPA or the State could invoke that authority to order the site owner to impose a land use restriction on the title to the property. Furthermore, pursuant to the New Jersey Industrial Site Recovery Act, the NJDEP has developed a model "Declaration of Environmental Restrictions" designed to control a land use restriction in the future.

6. The detailed analysis of alternatives should consider, to the extent possible, state acceptance as one of the nine criteria for evaluation under NCP § 300.430(e)(9). FSII Report § 4.1; Proposed Plan p. 12. Although the FSII Report and the Proposed Plan provide that state acceptance will be addressed following review of comments received on the FSII Report and the Proposed Plan, by letter dated January 11, 1994, the State notified EPA that it does not concur with EPA's site-specific remedial action objective for the site, and the Trust reiterated this concern in its May 20 letter. To the extent that EPA is already aware of the State's lack of concurrence, this information should be considered in the detailed analysis of alternatives.

7. The FSII Report and the Proposed Plan should develop and provide a detailed analysis of a remedy consisting of a capping technology in conjunction with access restrictions and a use restriction to prevent future excavation of subsurface soil. The detailed analysis for this alternative, as for all the alternatives evaluated, should include to the extent possible the criterion of state acceptance as required by NCP section 300.40(e)(9)(iii)(H).

8. There is no basis for requiring the replacement of the perimeter chain link fence in Alternative 4. FSII Report § 3.1.4; Proposed Plan p. 8. Given that Alternative 4 involves the removal of surface soil and replacement with certified clean, fill there is no reason to require replacement of the fence.

Furthermore, the Renora RD/RA Trust objects to EPA's requirement for a perimeter fence for the purpose of making it less difficult for EPA to keep Mr. Clementi from using the site for unauthorized purposes, as noted in Mr. Basso's July 18 letter. Preventing Mr. Clementi from storing automobiles on the site after the remedy is complete does not advance the remedial action objective of protecting human health and the environment. Rather, this requirement only serves EPA's interest in avoiding potential administrative inconveniences. EPA has other tools, such as the ability to obtain an injunction or issue an administrative order, to prevent unauthorized use of the site prior to delisting from the NPL.

9. The first sentence of section 1.9.2.5 of the FSII Report should be deleted and replaced with wording to clarify that the findings of both the Remedial Investigation and the 1992 Field Investigation indicate that the site has not contributed VOCs or SVOCs to the surface waters of Mill Brook.

10. The FSII Report and the Proposed Plan should state that of the two capping alternatives, Alternative 2 is more likely to conform to future site use given that the site is zoned for light-industrial use and that future residential use is unlikely. FSII Report § 4.3; Proposed Plan pp. 10-11. Routine maintenance of either type of cap is easily implemented and would insure that a capping alternative would conform to future land use.

Very truly yours,

William H. Hyatt, Jr.
Trustee, Renora RD/RA Trust

cc: William Tucker, Esq., USEPA Office of Regional Counsel
Christina Purcell, NJDEP, Bureau of Federal Case Management

DEPARTMENT OF HEALTH AND HUMAN RESOURCES

ADMINISTRATIVE OFFICES: 100 MUNICIPAL BOULEVARD,
EDISON,N.J. 08817-3353

EDISON
NEW JERSEY
JOHN O. GRUN, M.S.
Director

MEDICAL FACILITY: Dr. WILLIAM TOTH MEMORIAL HEALTH CENTER
80 IDLE WILD ROAD, EDISON, NEW JERSEY 08817-3353

908-248-7270
FAX 908-248-0494

July 23, 1994

Ms. Joyce Harney
U.S. Environmental Protection Agency
26 Federal Plaza - Room 747
New York, N.Y. 10278

Dear Ms. Harney:

Renora, Inc.
83 South Main Street
Edison, New Jersey

I have reviewed the Phase II FS and the proposed remedy for the Renora site. It was unfortunate that the bioremediation was unscucessful in treating the PAH contaminated soil, therefore, surface soil on site still poses unacceptable risks to residents that court come in contact with it.

The ground water contamination at this site is not critical - no one uses or can realistically be expected to use this shallow aquifer for drinking purposes. This office will maintain internal institutional controls to see that no potable well permit is ever issues on (or near) this site.

Contamination of the deeper soils is not likely to pose a risk unless disturbed. Ideally, a deed restriction would solve this problem. However, as per our research and prior discussions this options does not currently exist, unless imposed by the owner. Therefore, either the contamination must be cleaned or some type of institutional controls must be implemented. This office will continue to keep the documentation on file permanently and advise local land uses regulators of the conditions, as best we can.

I would urge the agency to push for institutional controls (new laws) to allow EPA to impose deed restrictions or in the alternative to create a registry of sites that could pose a danger to workers and others. This could be done as part of the "call before you dig" type 800 #'s similar to proposed regulations recently discussed for gas pipelines.

One other issue that was not discussed, requires a fence to continue around the site until the matter of liens are settled regardless of the clean-up undertaken. If you do not keep the fence in place, unauthorized use of the property is almost assured.

In closing, I agree with the choice of alternative #4, which not only protects public health and the environment, it eliminates most future costs and it could release the property to productive commercial uses in the near future.

Please call, if there are any questions.

Very truly yours,

John O. Grun, M.S.
Director of Health and
Human Resources

JOG: jbd
cc: Hon. G.A. Spadoro, Mayor
Hon. Councilmembers
Health Advisory Committee
Planning Board
Zoning Board

APPENDIX VI

STATE CONCURRENCE LETTER

State of New Jersey

Christine Todd Whitman
Governor

Department of Environment Protection

Robert C. Shinn, Jr.
Commissioner

SEP 30 1994

William J. Muszynki, Deputy Regional Administrator
United States Environmental Protection Agency
Region II
26 Federal Plaza
New York, NY 10278

Dear Mr. Muszynski:

Re: Renora Superfund Site
Edison Township, Middlesex County
Record of Decision

The New Jersey Department of Environmental Protection (DEP) has reviewed the Record of Decision and Responsiveness Summary prepared by the United States Environmental Protection Agency (USEPA) for the Renora Superfund Site, Edison Township, Middlesex County,

The DEP concurs with the selected remedy, Alternative #4, provided that institutional controls are established for the site.

The Record of Decision documents the selection of Alternative #4 consisting of excavation and off-site disposal of the top two feet of contaminated surface soil and debris at an approved landfill, and backfilling the site with certified clean fill.

New Jersey appreciates the opportunity to participate in this decision making process, however, if institutional controls are not established, the DEP cannot concur with the selects remedy for the Renora site.

The DEP looks forward to future cooperation with USEPA.

Sincerely,

Richard J. Gimello
Assistant Commissioner

c: Michael Hogan, Commissioner's Office

RECORD OF DECISION AMENDMENT FACT SHEET
EPA REGION II

Site:

Site name: Renora, Inc.

Site location: Edison Township, New Jersey

HRS score: 40.44

Listed on the NPL: December 1982

EPA Site ID #: NJD 070 281 175

Record of Decision:

Date signed: 9/94

Selected remedy: Removal of top two feet of surface soil

Estimated Construction Completion: 1997

Capital cost: $2,344,050 (in 1994 dollars)

Annual O & M cost: n/a

Present-worth cost: $2,812,860 (including 20% contingency)

Lead: EPA - Enforcement

Primary Contact: Joyce Harney - (212) 264-6313

Secondary Contact: Janet Feldstein - (212) 264-

Main PRPs: Contact - William Hyatt, Esq., of Pitney, Hardin, Kipp and Szuch

Waste:

Waste type: polycyclic aromatic hydrocarbons

Waste origin: mixing/blending operation

Estimated waste quantity: 5,500 tons of contaminated soil

Contaminated medium: surface soil